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GAS JOURNAL

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[Founded in 1849 as the "Journal of Gas Lighting."]

VOL. CLXIV. No. 3157.] LONDON, NOVEMBER 14, 1923. [75TH YEAR. PRICE 1s.

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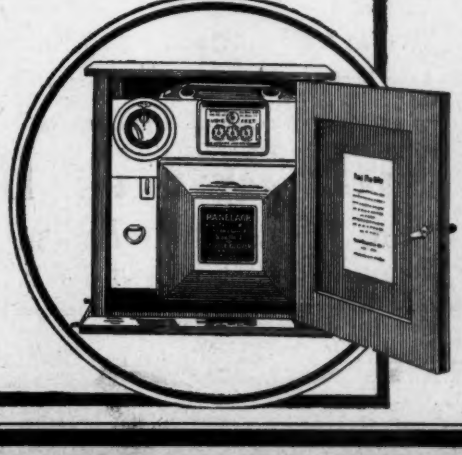

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VOL. CLXIV., No. 3157.] WEDNESDAY, NOVEMBER 14, 1923. [75TH YEAR.

EDITORIAL NOTES.

Work Wanted.

THE administrators and chief officials of gas undertakings are not, with those who hold similar office in other industries, unmindful of their responsibility to do all within their power to improve the present admittedly bad industrial and economic situation. It is not so bad as it has been; but we all know of the terrible amount of unemployment which still exists in our midst, and of the ghastly consequences of it to a million and more human beings, and to all who are dependent upon them. That mass of unemployment tells its tale as to the conditions of some of our industries. At the meeting of the Society of British Gas Industries last Thursday, there was something in the nature of an appeal to gas undertakings to do their utmost to help in the relief of the present situation. Lord Weir, the President, introduced it as the chief theme of a speech at the luncheon; Sir Arthur Duckham made a very direct appeal at the subsequent business meeting; and there was pointed reference to it in a paper by the Chairman of the Council (Mr. Frederick C. Tilley). The administrators and chief officials of gas undertakings are not oblivious of those things which are about us; they are strongly sympathetic; and their hope is as earnest as that of Lord Weir that during the next six months means may be found to bring about some measure of improvement in the country's industrial and economic position. That is precisely what the gas industry desires, even if regarded only from a selfish standpoint, for greater prosperity in our general industrial and economic situation means enhanced prosperity for the gas industry—in all directions, it causes larger demands upon it. The big customers of its products will require more; the spending power of its smaller customers will in the aggregate be greater. Gas feels very quickly the movements in requirements and ability to spend. Therefore, anything the industry can do in the way of contributing to the relief of the present parlous conditions will be creative not only of better internal conditions, but of business from which the industry directly benefits. That is a consideration which should be borne well in mind.

The question is: Are gas undertakings doing all that it would be to their own direct advantage to do in the way of providing work? We cannot expect them to do anything more than to contract for work which will be to their own economic advantage, as otherwise they would be injuring not only themselves but their customers. However, in conversation with gas engineers, we hear of many gas-works that are known to be working with plant which it would pay the owners handsomely to supersede by plant and methods which would give a higher efficiency. This alone gives an answer to the question that we have just put, and which was submitted in more general form by Lord Weir: "Are we doing all we can to help the situation?" He did not enter upon any political or polemical matter. Politics are something apart from all the organizations of the gas industry, except in so far as the questions directly affect the interests of the gas industry. As the President pointed out, no Government can command prosperity. It may do something to ameliorate bad conditions, may usefully remove certain handicaps from industry, but it can never create enterprise and commercial adventure. That must rest with those who direct industry and trade. But why are they not showing greater "enterprise and commercial adventure?" Lord Weir answers that there is a prevalent lack of the essential confidence upon which all enterprise must be based; and he has a strong feeling that, if prices and values would remain stable, confidence and enterprise would be secured. There is another thing—combined with stable prices and values, there must be demand. So far as gas is concerned, however, there can be no complaint as to demand, especially when we have regard to current circumstances. But once get a change for the better in those circumstances, and we may be sure that the demand for the products of the industry will make a considerable flight; and those gas administrators who are prudent will prepare themselves accordingly.

No doubt there are administrators of gas undertakings who hesitate even to take the advice of their trusted engineers, owing to the fact that prices and values appear to be in an unstable condition; and they are still hoping for something better to turn up in the way of cheaper money. Those who built on money obtained but three or four years ago, did not obtain such value as those who built last year, and those who are building now are doing better still. Is, then, the time opportune for constructive work? There is little prospect that any money will for long to come be procured on better terms than those now available; and combined with this is the view of Lord Weir—himself an engineer and administrative industrialist—that at no previous time in our history has expenditure on efficient equipment been more essential or better justified. If gas undertakings can, by scrapping old plant and adopting new, give gas supplies at a cheaper rate, then it is their duty and their interest to do so; for, as his Lordship says, there can be no actual risk in spending capital in improved technical appliances which will reduce either the cost of the production of gas or the cost of its utilization. He appeals to gas companies to do their part in this respect; and he reminds the manufacturers of plant that their part is to provide more and more efficient plant, and to exercise imagination in method and process. This they are doing, and would possibly be able to do still more were the collaboration that there should be between them and gas-supply engineers of a more intimate order than it is to-day through that absurdly fictitious line which antiquated rules and notions have kept established between the organizations of the industry. Every gain in efficiency attained by individual and united work means the elimination of waste in production or utilization; and every new conquest in this direction adds to the stability of the industry. The more this matter is penetrated, the more considerations one finds for giving very serious attention to the question as to whether each gas undertaking is doing all that is wisely possible in the provision of work.

Optimism, like most other things, has different grades; Sir Arthur Duckham's optimism is of the superlative order. The present, he admits, is a time of trouble; but it is his opinion that things are not really so bad as they are made out to be. It is true trade is improving; but the data as to unemployment are evidence of the big gap that exists between current conditions and a full measure of prosperity. We cannot get away from that; it is too present for any escape from recognition. Nevertheless, there is no harm in sharing Sir Arthur's cheerful opinion that the coming year, with the great British Empire Exhibition, will undoubtedly bring a boom. If all engaged in industry and trade could get such a belief into their minds, then there would be an immediate greater activity to do things to prepare for, and

to contribute to, its coming. Hence the appeal to every great public utility undertaking to make arrangements for improving their works on up-to-date lines, and so render them more efficient. This once more brings us up against what we believe to be the main obstacle in the minds of many gas administrators to the spending of money on capital and renewal work when it can possibly be deferred. That obstacle is present prices and values. Although we know, from recent big issues of capital, that there is much money available for investment, the attraction has been the offer of higher rates of interest than the gas industry is prepared to give, and, in fact, has no need to give in view of the security which the nature and conditions of the business provide. But there can be little (if any) hope that the terms upon which gas undertakings can obtain money to-day will descend for some time to a more favourable level. Then, again, there is Sir Arthur Duckham's assurance that prices to-day are low; and firms are now able to put in prices for jobs which are proportional to pre-war prices, and perfectly fair and proper. He does not think they will go lower. These are points for consideration and decision by gas administrators. They are frank expressions of belief based upon a knowledge of things as they exist, and as there is evidence they will be. They should, in our opinion, have a persuasive influence. Should a boom come, as is confidently expected, then the cost of materials will not descend; the probability is that the market values of many essentials will go in the contrary direction.

We leave the matter at that, and with the repetition of the question: Are we doing all that can be wisely done to improve works with the view to realizing a greater economic efficiency, and at the same time helping to relieve the present restriction in industrial activity, and to reduce that perilous load of unemployment, with its dire accompaniments, that exists to-day in this country of ours?

The Society of British Gas Industries.

THIS Society to-day represents an indispensable segment of the gas industry. It has been the means of bringing into unity and co-operative action those important units of a section of the industry which eighteen years or so ago were unorganized, had no combined voice or power, and had no means of approach other than individually. It matters little to-day who was the person whose brain first conceived the idea of setting the ball rolling in an attempt to effect their organization. What is of great importance is that the conception and the after-inception of the Society have been richly justified by the successful work which the organization has achieved for the industry generally. One remembers to-day with some amusement how—after the publication of the article in the "JOURNAL" for Dec. 6, 1904, to which Mr. F. C. Tilley, Chairman of the Council of the Society, referred in the paper he read at the meeting last Thursday—visitors to these offices seriously warned us against assisting to promote something which would favour rings and trusts. But we knew the responsible men of the plant and appliance manufacturing side of the industry were not of the type who would do anything which would lead to the cutting of their own throats; we knew them to be men who appreciated fully that their own interests depended upon those things which would encourage, and not retard, the progress of the industry; and we knew them to be men who were loyal to the interests of the industry. The fears and forebodings have all vanished. The Society to-day is influential; it is something to be reckoned with in the affairs of the industry—technically and commercially; and, as we have said, it is indispensable.

The paper by the Chairman shows how well the base of the Society was constructed by the founders—Mr. Charles Clare, Mr. John Glover, Mr. T. Marsh, and others. They started and continued with high aspirations, and in the provisional rules they framed, and which were adopted, they set a high standard for an effectively operative organization. And, as Mr. Tilley's survey of the history of the Society shows, aspirations and aims have, year by year, been fulfilled in the spirit and in the letter. There is no phase of the industry's operations into which the members have not, when desired and expedient, thrown their weight, be it in connection with technical problems or commercial affairs, because it is fully recognized by them that the very source of their own prosperity is the development of the economies and efficiencies which enable gas to be sold cheaply, and so promote its sale. That is fundamental to everyone whose business existence depends upon the gas industry; and there is no escaping the fact. We are all in the same boat. The work of every one of us is only part of the whole. For cheap gas the gas burner and stove manufacturers are partly dependent upon the highest efficiencies that the plant makers can produce in the means and processes of gas manufacture and secondary product development, and the plant contractors are dependent for some of their extension work upon the successes of the burner and stove makers in respect of gas utilization efficiencies. We know how much has been done in these ways; and the period of the Society's existence has been the most fertile in improvement in our industry's history.

We need not pass in review the work that has been done by the Society in its corporate state. Mr. Tilley, it will be found, does that admirably and effectively. But as to the present and the future, there is much to be done. The Chairman considers that the time has come when those sections which are most affected by competition from abroad should meet for the purpose of considering the steps that can be taken to improve the conditions of British manufacturers. We are in unusual times; and principles which we have held dear in normal times may be altogether unsuited to the conditions of the present. There is one thing which the members of the Society should remember in this connection. It is that, according to their productions, they are hit in different degree by competition from abroad; and those who are hit least should consider with the broadest sympathy the position of those of their colleagues who are most affected. The same in regard to our fiscal problems. Politically we may hold certain views; but we have to-day to think practically in the light of our immediate surroundings. Those who are injured most by competition from abroad, and those who cannot do business abroad through currency conditions, require the intelligent consideration and support of those who come less under the harrow of those conditions. We have got not only to create but to defend trade to meet the fearful monster of unemployment and the weight of financial obligations which have come upon us as a nation through the war and its aftermath. There is (as Mr. Tilley points out) far more sense and far more profit in attempting to provide employment, when in such straits as we are at present, through the creation of trade than in carrying out public improvements, which "too often may be termed luxuries, when considered in relation to the heavy financial burdens we are already carrying." Railway rates and standardization are other topics upon which the Chairman touched. He agrees that to-day transport is far too large a percentage of "oncosts;" and all possible pressure must continue to be exerted to bring railway goods rates into closer relation with the needs of the day. The useful work in connection with standardization, in which the Society have been participants, was dilated upon; and other lines in which standardization would be useful were introduced to notice—such as the amount of the seal in the plugs of, and the methods of testing, gas-cocks and fittings, cup-and-ball joints, iron pipe fittings, tubes used in pendants, &c. But standardization must not be carried so far that it hampers progress, individual effort, and new invention. In our opinion, a safe rule is that standardization is justified only so far as it produces economy. Mr. Tilley makes a distinction between standardizing the whole of an article and the parts, as has been done in the case of the standard burner. Once the whole of an article is standardized, every additional one of such product would be a reason for not adopting an improvement of a part; and after a time the capital invested would become so great that few would care to face the cost of replacement. The inventor, as he says, wants a ready market; not a reluctant one. Moreover, nothing must be done which will enable our chief competitor to make progress in efficiency at faster rate than our own industry. If this is allowed, then progressively the value of the present economies secured by standardization will be whittled away.

These and many other topics were treated upon by the Chairman. It is clear that the work that has been done in the past is only introductory to that which has to be done now and in the future. In a developing industry such as that of gas supply, there will never be any absence of co-operative work, either among the members of the Society themselves or in collaboration with the other sections of the industry. The prospects are good; and all must be ready to take advantage of the improvements in conditions which a very general confidence prognosticates are approaching.

We should like to see all the organized parts of the industry moving forward into the future as one body. May we not hope that the tenancy of the Presidential Chair of the Society by Mr. D. Milne Watson, in succession to Lord Weir, will do something to bring about— .

A happy consummation! An accord
Sweet, perfect, to be wished for.

Metal Sheetings.

THERE is very good ground for a close investigation of the metal sheetings used in the gas industry. The manufacturers of gasholders and gas-meters would welcome this; and there is no question as to the importance of the subject. In the discussion on Mr. Tilley's paper at the meeting of the Society of British Gas Industries last Thursday, Mr. R. J. Milbourne suggested that there should be research into the matter; and he was strongly supported by Mr. Samuel Cutler and Alderman F. Templer Depree. The constituents of gas have had a heavy weight of blame placed upon them in respect of destructive proclivities where metal is concerned. Corrosion appears to have been going on more vigorously during latter years; and there has been consistent, if not always truthful, imputation of gas as the cause. But there is little doubt that unsuitable metal sheetings and variations in quality have had no small part in producing a more rapid deterioration than in former years. Gasholders are things which cost a large amount of money; and the builders of such structures are no more pleased than the purchasers to see any undue depreciation of their life. They would much rather that the life standards of the past were those of the present. Mr. Milbourne made reference to holders erected fifty, sixty, and even seventy years ago with wrought-iron sheeting, which are still (according to him) practically as sound as when first erected, or (according to Mr. Cutler), if not in a state of perfect preservation, are vastly better than others erected twenty or twenty-five years ago. This, at any rate, shows the friendly relations that exist between modern gas and wrought-iron sheeting; and it likewise proves that the metal is blameworthy for some, if not a large part, of the deterioration. Mild-steel plates superseded wrought iron; but the inferiority in respect of resisting power has caused a reversion to wrought iron. Now engineers are specifying the "Armco" ingot iron; and Mr. Milbourne would like to have the relative claims of this and wrought iron investigated. This would be highly interesting—perhaps economically valuable, particularly as Alderman Depree seems to indicate that the "Armco" plate of to-day has not the same physical virtues as the plate bearing the same name of pre-war days. We do not see why this should be; if anything, and if possible, time should have brought about greater perfection. However, these are all matters that require settling in view of the money there is in them for the gas industry. Life of plant is an important factor in economy; and when mild-steel plates have only about half the life of wrought-iron sheets, then there can be little question as to which of the two should be adopted. Then comes the point as to whether "Armco" is superior to wrought-iron sheets. There is a good case for the setting-up, as suggested by Mr. Milbourne, of a Joint Committee of the Institution of Gas Engineers and the Society of British Gas Industries to explore this question. The industry wants the best possible value of money in the metal sheeting it requires, as in other things.

Thermal Efficiency in Gas Manufacture.

A STUDY of the thermal efficiency factor in gas manufacture has been made by Mr. Edward Crowther; and he has presented the results in a paper read before the Manchester and District Junior Gas Association [see "JOURNAL" for Oct. 31, p. 326]. In this, those who have made similar study of thermal efficiencies in gas manufacture will find several matters which they may desire to discuss. It is only in comparatively recent years that the value of a thermal analysis in assessing the performance of carbonizing and similar gas-works plant has received the recognition it deserves, and our knowledge of the theory of gas-manufacturing processes has had remarkable development. But it is clear that Mr. Crowther is of opinion that there has been some misdirection of that knowledge in trying further to improve the efficiencies of the plant—whether coal or water gas. Ideas and practice have run-off from attempting to promote the efficiencies of the processes themselves, to the incorporation, to gain greater efficiency, of such auxiliaries as waste-heat boilers. In the opinion of the author, this is wrong and unsatisfactory, and much more might be done to increase the efficiency of the processes themselves. Mr. Crowther discusses the matter solely from the theoretical point of view, and does not present his opinions and suggestions as being positively attainable in practice. What he has tried to do is to find a starting-point for effecting efficiency improvement in coal-gas retort settings or water-gas plants by returning waste heat to take part in the process itself.

In connection with coal gas production, Mr. Crowther points out that a promising expedient, which permits of all the air being preheated, while preventing the producer from becoming unduly hot, consists in returning to the producer some of the waste gases direct from the combustion chamber, together with a small amount of preheated primary air. By consuming half the carbon with air, and the remainder with steam, the following reaction is obtained:

$$4C + 2CO_2 + O_2 + \text{nitrogen} = 6CO + \text{nitrogen};$$

the reaction temperature being 1510° Fahr. After burning with secondary air, the final products carry into the regenerator 9240 B.Th.U., of which 8790 are returned to the setting—thus giving an over-all efficiency of 97 p.ct. As Mr. Crowther says, it is difficult to determine without actual experiment to what extent this process could be carried out in practice; but it seems certain that it could be employed to realize a considerable proportion of the heat at present wasted. He discusses the difficulties which he does not find insurmountable. Therefore we are hoping to hear in time more from the author on the subject.

With regard to the water-gas process, the extremely low efficiency of the blow is referred to. Of the potential heat of the water gas, 30 p.ct. is provided from the sensible heat of the coke, in this case 13·8 p.ct. of the total heat supply. In developing this amount of sensible heat in the coke, a further 25 p.ct. of the total heat supply is lost in the blow gas; so that the efficiency of the blow amounts to 35½ p.ct. only. By using the waste heat of the blow gas to preheat the blow air, it should, Mr. Crowther holds, be easily possible in practice to restore (say) 60 p.ct. of this heat to the generator as sensible heat in the coke, whereby the efficiency of the blow would become 74 p.ct. Working on these lines, the author supplies a heat balance which shows the potential heat of the water gas to be 64 p.ct. of the heat supplied. This figure, it is suggested, is a practical possibility, and well in excess of that obtainable by employing the waste heat to raise the steam required for the operation. Mr. Crowther's study is an excellent contribution to the efficiency problems of our gas-making processes; and we think there will be a wide investigation and consideration of the points he makes.

British Empire Gas Exhibit.

From the Board of the British Empire Exhibition, the information comes that the space taken in the Palace of Industry for a demonstration by the British gas industry measures 12,500 sq. ft. Mr. D. Milne Watson, the Governor of the Gas Light and Coke Company, is the Chairman of the Gas Exhibit; and Mr. F. W. Goodenough is the Chairman of the Executive Committee who are organizing the display. The Executive Committee are busy on the scheme; and it is expected that later on in the month, after the General Committee have considered the plans, information regarding them will be available.

Gas and the World-Power Conference.

There is to be a world's power conference at the British Empire Exhibition next year. Sir Arthur Duckham called attention to this at the meeting of the Society of British Gas Industries last week; and he holds that gas is not sufficiently represented in connection with the conference. The question is how can it truly be called a "world-power conference" if gas is not duly represented. Gas is a mighty force in the world of power; and it is an old contention of Sir Arthur's that any consideration of power problems should comprehend the whole of the agents, and not a part only. Also that they should be investigated in combination, to ascertain whether, by mutually helpful means, greater economy can be secured in the provision of power. Lord

Weir, the President of the Society, is on the Grand Council; and he said frankly that he had not previously appreciated the direct connection between gas and power. He is going to bring forward the matter, with the view of having a paper on the subject; and he has an eye on Sir Arthur Duckham as the possible contributor.

Refractories Research.

It appears that the moving spirits in the Refractories Research Association are somewhat aggrieved over certain of the remarks made, at the meeting of the Institution of Gas Engineers last June, by Mr. A. E. Broadberry, Chairman of the Refractories Research Committee. Between four and five months after those criticisms were published, we receive a comment upon them from the Chairman and Director of the Association. This is published in our "Correspondence" columns to-day.

"Japan's Purgatory" and Drawing Materials.

In our issue of Oct. 31 [p. 310], there was a protest against a paragraph that had appeared in "The Arc"—a bulletin published by Messrs. J. Halden & Co., Ltd., of Manchester. Judging from the contents of the letter which appears from them in our "Correspondence" columns to-day, the firm have evidently received many communications regarding the senseless attack that was then made on gas. A sample protest was from the Dorking Gas Company; and in the reply which was sent by the Editor of "The Arc" to our Dorking friends, there are these statements: "The contributions to our journal do not necessarily embody the opinions and policies of this Company"—that is, of Messrs. J. Halden & Co., Ltd. Also "it is essential for our journal to assume the character of absolute independence." And, again, "we are assured that not only yourselves, but all sections interested in the gas industry, will readily recognize the impartial position that we must take up in attempting to publish a journal of this character." And in the letter to ourselves, it is remarked: "Our position is at all times one of strict neutrality." In the first place, Messrs. Halden & Co. are the publishers of "The Arc;" and therefore are responsible for the material that appears in it As to the "absolute independence," the "impartial position," and the "strict neutrality," let us remind Messrs. Halden & Co. of a passage in "The Arc" article to which we, and many men in the industry, take exception; and no further comment will then be needed upon their declarations: "If, in rebuilding Tokio and Yokohama, they [the Japanese] were to exclude gas for all purposes in favour of electricity, they would not only do much to ensure the safety of their countrymen and buildings, but give a lead in developing better social conditions, which old civilizations would do well to imitate." Nothing short of a disclaimer of that statement, by Messrs. Halden in "The Arc" itself will satisfy the men of the gas industry. That will be the best possible way of showing their "independence," "impartiality," and "strict neutrality." The number of "The Arc" in which the offensive passages were published had a considerable circulation beyond the ranks of the gas profession and the undertakings constituting the gas industry—among electrical engineers, for example.

The Office of Gas Superintendent.

We resent strongly the idea of the "Observer" that the office of "superintendent of gas-works" is in any way "commonplace." Technical knowledge, ability, and skill in several directions are necessary to produce from the various processes and operations of a gas-works maximum economy and result. The little knowledge of these matters that there is outside is responsible for misappreciation and (as in the case before us) confused analogy. Not even our Prime Minister could successfully enter upon the management of a coal gas works, however proficient he may be in his present office, and in his work in the House of Commons. However, this is what the "Observer" says: "The office of Prime Minister in Great Britain, though too often regarded in these days as a charge almost as commonplace as that of a superintendent of gas-works, is in reality an extraordinary position worthy of the greatest masters of civic captaincy and direction. We cannot conceive any mortal so big as to be too big for that business, involving as it does the prime-movership in the British Empire."

Engine Working and Waste Heat.

There was an interesting little comparison in a paper that Mr. Robert Love recently read before a meeting of the Institution of Engineers and Shipbuilders in Scotland. There is room for increasing the over-all efficiency of gas-engine operation by auxiliary means, where circumstances justify. Mr. Love pointed out that, by passing the exhaust gases from gas-engines through a waste-heat boiler, it is possible in every-day practice to obtain an evaporation of slightly over 2 lbs. of water from and at 212° Fahr. per B.H.P. of the engine. In Diesel engines the thermal efficiency is higher than in gas-engines; and the temperature of the exhaust gases lower, which means that the output of steam available from the exhaust heat would be less per B.H.P. per hour. In actual practice on large engines, 1·2 lbs. of water from and at 212° Fahr. has been evaporated per B.H.P. per hour with an exhaust temperature of about 600° Fahr. It may, therefore, be assumed that in actual service a good design of waste-heat boiler could be relied on to give continuously an evaporation of 1 lb. of water from and at 212° Fahr. per B.H.P. per hour with the engine working at from three-quarter to full load.

Good Coal Outputs.

In the week ended Oct. 20, 5,678,600 tons of coal were raised; the wage earners in the industry being 1,174,900. In the week ended Oct. 27, the output was 5,673,500 tons; the wage earners numbering 1,175,500. The highest output this year was 5,824,900 tons in the week ended April 21.

Coal Mining in the September Quarter.

In the second quarter of this year, there was a marked improvement in the coal trade of the country; but this was not fully maintained in the third quarter—owing partly to seasonal causes, and partly to a falling-off in the demand for coal for export. According to the "Board of Trade Journal," the output of saleable coal in Great Britain in the September quarter amounted to 65½ million tons, as compared with rather more than 69 million tons in the June quarter. The quantity raised in the September quarter of 1922 was 63,336,000 tons. Shipments abroad in the three months ended September were 24 million tons, as compared with 25⅜ millions. Even so, the figures for the September quarter of this year have not been equalled in the corresponding quarter of any year since 1913. The average proceeds from the sale of coal (both inland and for export) were nearly 1s. 6d. per ton higher in the second than in the first quarter of the year; but it is probable the figures for the third quarter, when they are available, will show that this increase has not been maintained. There was the usual seasonal rise in the price of house coal; but the average value f.o.b. of all coal exported fell from 27s. 2d. a ton in June to 24s. 9d. a ton in September. During the September quarter, there was an increase of about 9000 in the number of persons employed—raising the total to 1,185,000, including clerks and salaried persons, or 68,000 more than were employed at the outbreak of war. As a result of the betterment of trade during the months of March, April, and May this year, wages showed a material improvement during the September quarter, being, it is estimated, about 10d. a shift higher on the average than in the previous quarter, and nearly 1s. 6d. a shift higher than in August, 1922, when all the districts were on the minimum provided for in the national wages agreement. The estimated earnings of workers of all classes and ages was in the September quarter 10s. 8d. per shift on the average, as compared with an ascertained average of 9s. 9¾d. per shift during the quarter ended June.

Mining Subsidences.

The Royal Commission on Mining Subsidence have had before them a Memorandum upon the law of support, prepared, on behalf of the Mines Department, by Mr. David Douglas Reid, M.P., Barrister-at-Law. The Memorandum deals only with the law as it exists to-day, and does not take into account any changes made by the Mines (Working Facilities and Support) Act, which comes into operation on Jan. 1, 1924. It goes into the matter very thoroughly and succinctly, and gives illustrations of the documentary evidence determining rights and obligations in respect of support. Referring to the Gas-Works Clauses Act, 1847, it points out that an Act which vests gas-mains in a company, and provides for their maintenance, and empowers the Company to lay down and maintain new mains, and to supply gas, entitles them to support from the adjacent mines.

PERSONAL.

Mr. A. C. FROST, late Representative, General Manager, and Director of the Sutherland Meter Company, has joined the firm of Messrs. George Wilson Gas-Meters, Ltd., of Coventry, and takes up his residence in London. His business address will be at George Wilson Gas-Meters, Ltd., Branch Works, Nos. 46 and 47, Auckland Street, Lambeth, S.E. 11. For some time past the London area has been temporarily worked by Mr. F. SLADE, of Coventry, who now will permanently work the Midland and Western area for George Wilson Gas-Meters, Ltd., Coventry.

Prof. Dr. H. BUNTE was elected member of honour of the Dutch Gas Association in connection with the celebration of its fiftieth anniversary. A like honour was accorded to Dr. CARPENTER, of London, and M. LAURAIN, of Paris.

The new Mayor of Wallasey, Mr. A. H. EVANS, was appointed Chairman of the Gas and Water Committee three years ago, after having for several years acted as Vice-Chairman, and very soon began to use his influence practically to reconstitute the gas-works. While he has been Chairman, the new vertical plant has been installed at a cost of £137,000. Prior to this the works depended on a horizontal and also a vertical plant. The new plant was formally opened in January last. Mr. Evans also advocated and carried through a pressure-raising scheme costing £17,000, which has also been a successful and needed innovation. Under his auspices the terms of the contract by which the tar distillation plant is let have been revised favourably to the interests of the ratepayers.

At the offices of the Wallasey Gas and Water Department last Thursday a presentation was made to Mr. EDWARD CROWTHER, Assistant Engineer, on the occasion of his departure to take up a more important appointment at Stoke-on-Trent. The gifts, which took the form of a leather suit case and an umbrella, were handed to Mr. Crowther by Alderman A. H. Evans, Chairman of the Gas and Water Committee. Mr. J. H. Crowther, Engineer and Manager, remarked on the kindness of Alderman Evans in coming to make the presentation when he was so busy, and just about to take up his duties as Mayor. It was evident that the office of Chairman of the Gas and Water Committee must be a good training ground for the mayoral chair, as Alderman Evans was following another ex-Chairman in the person of Alderman W. S. Chantrell. Alderman Evans said he had been brought into very close touch with Mr. Edward Crowther, and fully realized his natural abilities. He wished him every success in his new sphere, and hoped the experience he had gained at Wallasey would be of value to him. In acknowledging the gifts, Mr. E. Crowther said he was proud to think he had their goodwill, and would always remember with affection those with whom he had been associated at Wallasey. He had been very happy at Wallasey, and hoped it would always be the happy works he had known. Wallasey had a tradition for loyalty; and he asked for the same kindness to be shown to his successor, whoever he might be, as had been extended to him.

We learn that Mr. WALTER CHANEY has resigned his seat upon the Board of Tully Gas Plants, Ltd.

OBITUARY.

The death took place last Saturday, at the age of 76, of Mr. GEORGE LAWSON SWALLOW, who was for fifty years in the service of the Newcastle and Gateshead Gas Company. For a large part of that time he was in charge of the Elswick Gas-Works.

Midland Junior Gas Association.—A visit has been arranged for next Saturday afternoon, Nov. 17, at 3 o'clock, to Messrs. Evered and Co., Ltd., Surrey Works, Smethwick.

Mechanical Engineering in Modern Gas-Works.—At a meeting on Dec. 12 of the Cardiff Branch of the Institution of Mechanical Engineers, Mr. H. D. Madden is to read a paper on "Mechanical Engineering in Modern Gas-Works."

North of England Gas Managers' Association Auxiliary Meeting.—The ninth half-yearly auxiliary meeting of the North of England Gas Managers' Association will take place in the Gas Office, Grainger Street, Newcastle-on-Tyne, at 2 o'clock, on Saturday next, Nov. 17, when the chair will be taken by Mr. W. L. Robertshaw, of Sunderland. After the election of a Chairman for the ensuing year, two papers will be read and discussed—one by Mr. Bernard Richardson, of Tynemouth, on "Recent Experiences with Extraction of Naphthalene, Corrosion of Mains, and Caking of Sulphate of Ammonia," and the other by Mr. F. J. Colman, of Wear Tar Works, Sunderland, on "Petroleum."

Books Received.—We have pleasure in acknowledging the receipt of two new volumes in the "Gas and Fuel Series" published by Messrs. Ernest Benn, Ltd., No. 8, Bouverie Street, E.C. 4. One of them is the third edition of "Coal Tar Distillation and Working Up of Tar Products" by Arthur R. Warnes. The reception accorded to the second edition of this book induced the author to use it as a nucleus of the new volume, which comprises nearly double the number of pages, and is in effect a completely new treatise. There are 550 pages, with between 150 and 200 illustrations. Price 45s. The other book is written by E. W. Nicol, and is entitled "Coke and its Uses." Price 25s. These publications will shortly be reviewed in the "JOURNAL."

ELECTRICITY SUPPLY MEMORANDA.

The Public Verdict.

THE electricity industry has, for two or three decades, been making bids for the heating and cooking load—in fact, it is difficult now to fix from memory alone the year when first electric heaters were seen, and subsequently electric cookers. Success in placing these appliances with the public has not been very pronounced, though this is not due to the want of continuous propaganda, or to any lack of boldness in proclaiming the virtues of electrical methods, or of secretiveness as to their deficiencies, or of traducing in many singular and ignorant ways the merits of the chief competitor, to which, however, public experience has formed a bulwark against which such traducings have been shattered. Now and again special efforts are made to stimulate electric heating and cooking; and then there is a little elevation in business, which sinks again to the former low level. So things go on; and the high tide of favour is still, and likely to continue, with gas, while electricity delivers in the form of energy only 7 p.ct. (and even lower) up to 10 p.ct. of the original heat of the coal to the distribution cables, and then a goodly proportion of that is lost in transmission. Special efforts are made to stimulate demand for these appliances, despite the great drawbacks. The officers of the Glasgow Electricity Department have been making great exertions in this direction; and much has been heard of their enterprise through the electrical papers. The Department had a display at the recent Health and Housing Exhibition; and we read in the electrical papers that they were successful in booking orders for 260 fires on hire, and for 50 cookers—this in addition to the ordinary showroom business. Some of the readers of these notes may not have observed the information given in the editorial columns of the "JOURNAL" last week regarding the bookings of the Gas Department during the run of the exhibition. The anxiety of the Gas Department is not caused by the energetic competition of the electricity officials, but by the flood of demand for gas appliances. A week ago there were more than 3000 gas appliances on order to be fitted in the gas-supply area. During the run of the exhibition, orders were received for upwards of 2000 gas-heating appliances, nearly 920 cooking appliances, and about 50 water-heaters. In the course of the past three months, the Department, in addition to their own permanent staff of 250 fitters, have had to employ the staffs of over 300 master plumbers in Glasgow. Just recently—the period of accentuated energy in trying to gain new electrical business—the Gas Department have been making a new record in respect of demand for gas-consuming appliances. This is the best possible evidence of the public verdict, and a healthy answer to the local newspaper puffs which the Electricity Department have secured, and that thankfully.

Passing of Favour for Indirect Lighting.

There seem almost as many changes in fashion in electric lighting as there are in ladies' dresses. This is partly due to lamp development, and partly to the accessories required for mitigating and making bearable the increased intrinsic brilliancy of incandescent lamps. There was the period of the carbon filament lamp; then that of the metallic filament; there followed the run on indirect or semi-indirect fittings; and now the day of the opal bulb for gasfilled lamps is here. This type of lamp is likely to become more popular than the semi-indirect method of lighting, seeing that it offers a larger scope for the use of attractive fittings, and at the same time the eyes are protected from the highly incandescent filament. But with opal bulbs, the efficiency in relation to consumption is diminished, compared with the plain glass bulbs, although the utility efficiency is enhanced. The writer of "Trade Talk" in "Electrical Industries" states that there is a decided turn against the semi-indirect unit for home lighting; and he asserts that the alabaster and opal bowls are not generally sold in the same proportion as was the case a few years back. He thinks the reason is that the average man and woman have got tired of seeing them everywhere—when eating, working, shopping; at almost every turn they saw the same fitting. One cannot, he proceeds, do much to add variety to this type of lighting unit. That is true. It was quite the rage at one time among some users of electric lighting. But after a period it began to pall; and people commenced to talk of the monotony of such lighting. That has grown; and householders who have had breakages of the bowls (probably through careless servants) know something as to the expense of renewal. This expense has not been a pleasure. The same with the dust that accumulates in the bowls, and which, if not constantly removed, declares its presence, when the lights are going, with an obtrusiveness painful to the sensitive housewife. Now there is the series of gasfilled lamps with opal or other diffusing bulbs, which, it is said, affords to the enterprising contractor an opportunity of selling new artistic fittings. So another fashion is setting-in for domestic electric lighting.

Shop Window Lighting.

There have been ample indications recently that many gas undertakings are paying greater attention to the question of bringing about a general improvement of lighting. This is an acknowledgment that, in this respect, there

are things that have been left undone which ought to have been done. But now matters are taking a new course; and the more this continues, the better. This applies not only to domestic lighting, but to other forms—street, shop, factory, and so on. Shop lighting, owing to summer time, has become more or less a seasonal affair. But now that the long evenings are with us, one gets naturally attracted in the evenings to streets with well-lighted shop windows. It cannot be said that the gas industry has shown any vast amount of ingenuity in this connection; and one would welcome some fresh originality in gas-lighting schemes for this particular purpose. There is no question that attractive shop-window lighting is a good advertisement—both for the suppliers of the lighting agent, and for the tradesmen. But attractiveness must go with fitness and efficiency for the purpose. It is no use illuminating goods in a window with glaring lights which are an offence to the eyes of those who wish to make inspection. The electrical people are this season giving a considerable amount of attention to this matter; among them the General Electric Company, who have recently been making a demonstration of window lighting before the members of the British Association of Display Men, whose work is creative in connection with the displays of our great emporia. There is ample scope for them; and artificial lighting is of immense importance in assisting them in the effects produced. The Association were addressed by Mr. E. L. Randall, of the Illuminating Engineering Department of the "G.E.C.;" and in demonstrating the lighting effects that could be produced he was aided by a fully equipped window erected at one end of the meeting room. In the gas industry we have learned the convincing power of object-lessons—in showrooms, at exhibitions, and elsewhere. The subject of late shop window lighting was referred to by Mr. Randall. He has been making personal observations; and apparently he has seen something like 250 persons in an hour stop at well-lighted windows, the illumination of which costs only 2½d. per hour. This, it must be conceded, is cheap advertising. In this paragraph, hints may be found by gas men in districts where shop window lighting has not been taken in hand and modernized. Shop windows are worth studying—not that they are particularly good customers, but because of their value from the advertising standpoint. Gas showroom windows should be (if they are not always) well illuminated; but the reproduction of that good lighting in other shop windows (with changes in method appropriate to the goods) must create an invaluable impression throughout the district. But if large stores and shops will have electric lighting, then let us show them how to obtain it cheaper by the aid of a gas-driven generating set than by tapping the local cables.

How to Secure Wiring Contracts.

To instal electric wiring in a house in a sightly, durable, and safe manner, costs money. There are surface systems of wiring which are not so expensive, but are not so sightly; and there is a makeshift appearance about them, which many people would not tolerate. All sorts of prices are quoted per point; and there are electrical men who hold that the public are grossly misinformed as to the expense. They talk of an installation costing £25 or £30, as though that was a mere bagatelle to the majority of people. The reverse is the case. The majority of people have not £25 or £30 that they can expend on something for rented houses, which would be left if they wished to move. At the second (for this session) salesmanship conference of the Electrical Development Association, Mr. H. W. Roberts, of the General Electric Company, gave some advice to contractors as to how they should proceed to oust gas from houses, and instal electric wiring. He had to admit that even among his own friends he had some who apparently feel that they are too poor to pay for the introduction of electric lighting. Those friends are not isolated cases. Wherever they are situated, they are surrounded by others in the same condition. The *modus operandi* which Mr. Roberts recommends for securing more wiring work is this: He is sure great success would accrue if contractors, once they have carried out a wiring installation in a house in a particular road, were to get the names of the gas consumers in the road, and send them an approximate estimate for wiring for electric light—not forgetting to put in some extra outlets, so as to sell these people some electrical appliances at a future date. In Mr. Roberts' opinion, there are many people who think wiring is going to cost them £70 or £80, whereas "probably the cost would only come out somewhere about £25 or £30"—a sum which, he thinks, they would be willing to spend. In the reports of the discussions on the paper, we do not detect any emphatic support for the idea that electric wiring is cheap, nor was any argument advanced as to why the tenants of houses already equipped for gas should abandon those fittings, and unnecessarily spend money which they can ill afford.

The Red Seal.

We have heard of "red seal" somewhere before—at any rate, in pre-war days—and associated with names that are as household words. But, according to "Electrical Industries," a new use has been found for the red seal. In America, they have Electric Service Leagues, which are fed with information for local use by the Society for Electrical Development. In Toronto, there is an Electric Service League. This body has drawn up a general specification for a standard electric home, and it provides a large red seal for display on any house for sale which owns the necessary amount of wiring—that is, according to their specification. This apparently provides for extensive equipment—not of the £25 or £30 order. We see that lighting must include, in addition to the usual ceiling-lights, various outlets on porches, cellar stairs, and "other corners" often left unlighted. Three-way switches, too, are specified for hall lights. The red seal, it is stated, bears the words "Standard Electric House," in white upon red. Before the seal is supplied, the property has to be inspected by a League representative, to ensure that it conforms with the regulations. It is thought by our contemporary that this enterprise should have some effect in bringing home to those concerned the added value conferred upon a house by provision for electric service, instead of merely electric light. It is all very silly. But should there be any enthusiasts in the gas industry, the all-gas house might, we suggest, have a "black and white" seal placed upon it. There are many all-gas houses to-day, but few to be let or sold, so that the demand for the seals would not be overwhelming. People in all-gas houses do not like to leave them. We have heard of householders, with one or two electric radiators, who have said very bad things after the first winter quarter's account for current has been rendered. We cannot imagine what their language would have been like, had they lived in all-electric houses. Perhaps they would then have required a red seal placed over their mouths. Electrical men should consider the point.

More Economists.

Electrical economists are spreading. Is it because their accounts are so high that people are tempted to steal electricity? We have our private idea as to what the answer should be. Reference has been made in the "Memoranda" more than once recently to cases of electricity pilfering, which the suppliers have not liked, and so have hauled the offenders before the magistrates. Adela Clayton, of Brighton, has been diverting and thereby stealing current; and Ernest Oakley, it was alleged, aided and abetted her. So summonses were issued which caused the two to face the magistrates at Brighton. It appears that Mrs. Clayton went to Mr. Oakley about an electric iron; and he suggested to her that she should have a power meter. This was fixed by the Electricity Department. Thereafter, the lighting meter did not function, although lights continued in the house. When the attachment between the power and the lighting circuits was discovered, Mrs. Clayton declared, at the Electricity Offices (so it was said in evidence), that Mr. Oakley had put her up to it, and showed her how it could be done. But the Magistrates thought there was a shadow of doubt as to Mr. Oakley's intentions; and so he was given the benefit of the doubt, and discharged. But Mrs. Clayton was fined £10, with the alternative of twenty-one days' imprisonment. The Magistrates looked upon her offence as a serious matter, and thought she knew more about electricity than had been made out. Perhaps they were right. Perhaps, too, she has come to the conclusion that a little knowledge is a dangerous, and sometimes expensive, thing.

United States Coke Production.

Final statistical results have been published by the United States Department of the Interior of the Geological Survey's canvass of the coke industry in 1922, compiled by Mr. H. L. Bennit. The returns of the producers show a total output of 37,134,012 net tons of coke, made up of 28,550,545 tons of bye-product coke, and 8,573,467 tons of beehive coke. With the exception of 1921, when business was extremely depressed, each year since 1911 has shown a larger total output of coke than 1922. Again excepting 1921, the production of beehive coke was the smallest since 1888. If, however, 1920 be left out, the production of bye-product coke was the largest recorded since the beginning of the industry. As compared with 1920 (the last normal year), 1922 revealed decreases of 29 p.ct. in the total production of coke, 8 p.ct. in bye-product coke, and 58 p.ct. in beehive coke. Only 23 p.ct. of the total came from beehive ovens last year, as compared with 40 p.ct. in 1920. Pennsylvania far outranks the other States in connection with the beehive coke industry. In 1922, no less than 80 p.ct. of the total beehive coke produced was attributable to Pennsylvania, which also ranked first in the matter of bye-product ovens, with 28 p.ct. of all these ovens, and 25 p.ct. of the total bye-product coke production.

Storage Space Requirements for Coal.

In reply to an inquiry as to the number of cubic feet of space required per ton for the storage of coal, a recent issue of "Power" stated that the weight per cubic foot of broken coal depends on the specific gravity of the coal, which varies with coals furnished from different localities, and at different times from the same mine. It varies also with the size and uniformity of this size, and it further depends upon how much the coal is "shaken down" in bulk by transportation and method of handling. Hence there is considerable variation in the number of cubic feet per ton; and, again, confusion is likely to arise from misunderstanding whether the consideration is to be made of "short" tons of 2000 lbs. or "long" tons of 2240 lbs. The average weight of commercial sizes of broken American anthracite, shaken down in boxes holding 2 c.ft., has been quoted as 53·4 lbs. per c.ft., and the average weight of Maryland and Pennsylvania bituminous coal as 52·8 lbs. per c.ft.—from which a short ton of anthracite would occupy about 37·5 c.ft., and a long ton about 42 c.ft.; and a short ton of bituminous coal would take up some 38 c.ft., and a long ton about 42·5 c.ft.

SOCIETY OF BRITISH GAS INDUSTRIES.

THE Autumn General Meeting of the Society was held last Thursday, at the Holborn Restaurant. There was a large attendance of members. Preceding the business meeting, the members had luncheon together, with the PRESIDENT (the Rt. Hon. Lord Weir of Eastwood) in the chair. They also gave hearty welcome to the three Past-Presidents—Sir Robert A. Hadfield, Prof. Arthur Smithells, and Sir Arthur Duckham. Mr. F. C. Tilley, the Chairman of Council, was with the President; and Mr. J. Wilfrid Drake, whom the members will in due course welcome to the chair, was near by. Looking along the top table, one noticed several past-Chairmen. At one end was seen Mr. Charles Clare, Alderman F. Templer Depree, and Alderman George Clark. At the other end, Mr. Samuel Cutler, Mr. Percy F. Holmes, Mr. H. M. Thornton, and Mr. Cyril G. Davis.

After the luncheon, the PRESIDENT submitted the toast of His Majesty the King, which was loyally honoured.

THE RESPONSIBILITY OF GAS UNDERTAKINGS.

The PRESIDENT said:

Gentlemen,—I have not yet had either the privilege or the opportunity of adapting myself to the atmosphere of our Society's meetings; and I rather envy Sir Robert Hadfield, Sir Arthur Duckham, and Prof. Smithells. They are all experienced Past-Presidents; and let me add that we are glad to welcome them very heartily to-day. But, gentlemen, I have learned one thing; and it is that your functions are of a strictly businesslike nature. Accordingly, I do not propose to complicate our Secretary's timetable by making any prolonged remarks. Let me, therefore, in the first place, say how gratified I am at being able to preside to-day over such a full gathering, because it gives me a chance not only of learning of your valuable activities, but also of having the privilege of meeting so many of our members.

Since the last meeting, at which I was inducted as President of the Society, I have had little opportunity of educating myself on gas matters; and I can only trust that before I have to give my Presidential Address, some of you will kindly take me over a gas-works. I want to see one thoroughly; and if I have to go through a vertical retort, then I will pick one of the low-temperature variety. [Laughter.] I hope you will not be too hard on me when I confess that I have just returned from a visit to the United States, where I spent my time studying the production of electricity. If you will have a steam engineer as your President, you must take the consequences. But, gentlemen, America is a country where gas of all kinds is fully appreciated. When it is not of the illuminating variety, they call it "bunk," and it has, I believe, a low thermal value. Now, as many of you are aware, in Chicago the gas and electricity supply systems are under single control and ownership. They realize that not only is there an ample field for each of these services, but also that they are in many economic senses mutually and usefully co-operative. The gas division of the Supply Company in Chicago is very fond of propaganda, and make great use of the slogan—"You can do it better with gas." The Electricity side dislike that slogan. It is rather effective. Well, the Electricity Department supplied the Gas Department with a number of electrically propelled delivery vans; and the advertising manager pasted on each side of these vehicles, "You can do it better with gas." The electricity division were overjoyed, because the term gas in America usually means petrol. [Laughter.] I only refer to this to show the danger of using catch phrases either in politics or in gas.

Well, gentlemen, let me turn to more serious matters for a moment. I feel sure I am voicing your feelings when I express our earnest hope that during the next six months we may find some means of returning to some measure of prosperity in our industrial and economic situation. I assume that, in common with other industries, you are feeling the burden of depressed trade, and also the keenest regret and sympathy with those who are being subjected to the demoralizing influence of our present employment state. While I am conscious that there is no single factor in policy we can adopt, and no short cut or royal road we can find to lead us to better times, yet I am inclined to ask whether we are doing all we can to help the situation. In saying this, I have not in my mind anything of a political nature. This is not the place to discuss these matters. Rather I have in mind the responsibility which I feel rests on every individual or corporation who is in a position to control enterprise to-day. Surely they are aware that industrial prosperity cannot be commanded by any Government. A Government may ameliorate bad conditions, may usefully remove certain handicaps from industry, but it can never create enterprise and commercial adventure—these must always rest with the community itself. There is a prevalent lack of the essential confidence on which all enterprise must always be based.

I have a feeling that if we could all be convinced that prices and values would remain stable, confidence and enterprise would be secured. The individual who spent a million in new plant in 1921 ruefully appreciates to-day that he could secure the same plant for £600,000; and he is deterred from further enterprise by the possibility that next year he may carry it out still more advantageously. Given a new confidence in valnes, let me take the gas industry as an example. Is it clearly recognized that at no previous time in our history is expenditure on efficient equipment more essential or better justified? Am I not right in saying that no industrial country can be regarded as equipped to perform its industrial functions unless it can offer gas supplies at the lowest rate which modern methods can secure? Accordingly, there can be no legitimate risk in adventuring capital in improved technical appliances which will reduce either the cost of production of gas or the cost of its utilization. Well, that is the gas company's part to play—to be enterprising, courageous, and confident. There is another part you must play—the provision of more and more efficient plant, and the exercise of imagination in method and process. I am tempted to add an appreciation of the sense of proportion—such as was shown by Sir R. Hadfield in his famous calculation that the world's annual corrosion of iron and steel represents over 20 million tons per annum. That is a real representative economic and technical problem to solve.

Gentlemen, you have an illimitable field in front of you—the solution of the problem of waste in industry, whether it be in thermal units, man-hours, or unnecessary transport of material. Your drive after economic efficiency must be strong, courageous, and imaginative. France, Belgium, and Germany, amid all their troubles and difficulties, have given this aspect of reconstruction the foremost place. They appreciate that, in the economic strife of the future, their standard of life will be in a great measure determined by the perfection of their country's equipment, especially as regards what we call public utilities—gas and electricity. We need all the help the Government can give us in industry; but the final solution of unemployment must rest largely on the enterprise and courage of those who control finance and expenditure, and on those technicians who render that expenditure "worth while." I hope nothing will be done by any authority to lessen or obscure these responsibilities. [Applause.]

THANKS TO THE PRESIDENT.

Mr. TILLEY said the inspiring address with which they had just been favoured had no doubt caused the members to appreciate the great advantage they as a Society possessed in having Lord Weir as their President. He was sure they would agree that he (the Chairman) was only doing the right thing in asking them to drink to the very good health of their President. Lord Weir was there that day at very great personal inconvenience. He had told him that, when he travelled back to Glasgow that night, it would be the fourth consecutive one he had spent in a sleeping car. Nevertheless, he was present at their luncheon with a smile, and had delivered an address to them which they felt was (as he had said) an inspiring one. They thanked Lord Weir for coming to preside over them. He had told them that he had not yet got into their ways; he (Mr. Tilley) thought they ought to get into Lord Weir's ways. He had the energy and the ability to recognize the conditions around him; and he had shown an insight that few of them really had. He had asked for an opportunity of visiting a gas-works. He (Mr. Tilley) did not know whether their President quite understood what that meant. If he would thoroughly go through a gas-works (Sir Arthur Duckham could probably arrange that), and he saw the inward parts of a gas plant, he would understand that it was not one of the cleanest processes, though it was very different from what it used to be. Sir Arthur Duckham would probably say it was a kind of drawing-room affair under present conditions; but Lord Weir, after he had gone through a works, would no doubt be glad if he had had overalls on. He thought they would all appreciate the opportunity of drinking to the health of their President.

The toast was enthusiastically received.

Lord WEIR thanked the members most sincerely for having given him such a kind reception. He wanted to do all he could to help the Society. Votes of this kind in some countries were regarded as unessential. When he recently arrived in New York, and went up to his bedroom in the hotel, he required to telephone someone. He went to the telephone, and gave the number. The girl repeated it; and he said "Thank you." Her reply was: "Cut out the thanks; it only confuses the operator." Well, on this occasion he was not confused; and he thanked the members most heartily.

THE VICE-PRESIDENTS.

Mr. J. WILFRID DRAKE proposed the toast of the Vice-Presidents. As he looked down the list of names, he saw those of Sir Dugald Clerk, Mr. Charles Clare, Prof. Smithells, Prof. Dixon, Sir Alfred Keogh, the Rt. Hon. Sir Henry E. Duke, Sir Robert A. Hadfield, Bart., Sir Arthur Duckham, and the Rt. Hon. Lord Riddell. The least one could say was that they were respectable. [Laughter.] He could assure the members that it did not give him any qualms to have to propose a toast to their Vice-Presidents, particularly when one took into consideration that all the titles on the list had been earned by merit. There were no fancy ones. There was something stimulating and encouraging in a list of this character, because it was an example to them of what could be done, and of the energy that must have been applied to work by their Vice-Presidents in order to attain to such positions as they now occupied. Their contributions to the worlds of science and industry had been very great indeed. He thought their achievements were an encouragement to them to put forth every effort they could in the work of their Society, and not be content to ride as passengers on the vehicle of illustrious names. With the toast, he coupled the names of Sir Robert Hadfield and Prof. Arthur Smithells.

Sir ROBERT HADFIELD heartily thanked the members for the kind way in which they had drunk the toast. Speaking of his own experience of the Society, he said the members kindly asked him to be their President some years ago; and he had accepted the invitation with the very unhappy feeling that he would not do the members justice in the honourable position they had called upon him to fill. But after a year of office, he could say that in his life he never enjoyed anything more than he did that year. Being present on this occasion gave him the chance of again wishing the Society every prosperity in the future. They had just listened to some exceedingly wise words from Lord Weir. He had given them advice which at the present time it would be well to bear in mind. This, of course, was no place for politics; but he would like to make this remark: Although conditions were very bad, he thought he could say that his fellow countrymen had been through worse times than those they were in to-day, and that they could pull through, and would pull through. Let them remember that

they had come through a big war, which had cost £40,000,000,000 of capital, and immediately following, the country saw no end of strikes; and, with the two together, the marvel was they were so well off as they were to-day. He urged them all to put their shoulders to the wheel, and study every possible form of economy, together with technical and higher education. They could not put these things too high. They had their local universities; and there was every chance now of those who desired to do so to get knowledge and experience. Their educational facilities were the true means of fighting to victory in the future; and this applied not only to the men in high place in industrial establishments, but to the workmen themselves.

Prof. SMITHELLS, also replying, expressed his pleasure at once more having an opportunity of returning to the fold of the Society of British Gas Industries, where he had always come willingly, and had never been shorn. [Laughter.] On the contrary, he had gone away from their meetings with renewed ardour. He was glad of the opportunity of seeing and hearing Lord Weir, who had justified all his expectations of him. They knew of the great public services which their President had rendered to this country; they knew what wisdom had fallen from his lips; and they knew how he exemplified the state of mind which ought to be an example to them all at the present time—that of cheerfulness and hope, with clear vision into the difficulties they had to face. It was a perfect delight to hear a great leader give a good lead when a lead was so much needed, and giving it in terms combining wisdom, delicate humour, and due solemnity. In conclusion, he expressed the hope that Lord Weir might be taken through a gas-works, and that on the occasion he (Prof. Smithells) might be there to protect him.

THE BUSINESS MEETING.

The business meeting was held subsequently in an adjoining room—the Right Hon. Lord WEIR OF EASTWOOD (the President) in the chair.

The PRESIDENT remarked that it gave him very great pleasure indeed to preside for the first time at one of the general meetings of the Society; and he was sure that their self-sacrificing and hard-working Council must feel very grateful for the good attendance that afternoon. He hesitated to say it, but he had always thought it was rather a wise step for scientific societies to hold their meetings during Motor Week. [Laughter.] After all, there was a very close association between gas and internal combustion. Now he would go straight ahead to the very interesting agenda, and first he would ask the Chairman of Council to give a report of the Society's work during the past six months.

Mr. FREDERICK C. TILLEY, M.Inst.Mech.E. (the Chairman of the Council), then read the following—

REPORT OF THE CHAIRMAN OF THE COUNCIL.

In accordance with past practice the Council have met regularly each month, and the meetings have been well attended. Many matters have been considered and dealt with—some of which are summarized in the following report.

NEW OFFICES.

The fitting and furnishing of the new offices of the Society in Victoria Street have now been practically completed, and we believe they are worthy in every respect of the status and aims of the Society. We take this opportunity of thanking the members for the interest they have taken, and for their generous support, which is much appreciated. We shall be glad if they will make full use of the advantages now offered. It is hoped there will be a formal opening shortly by our President, Lord Weir.

RETORT SETTERS.

Much very useful and onerous work has been carried out by Section I. in many directions. Negotiations have been proceeding for some considerable time in connection with the Manchester Agreement and the new National Working Rules issued by the National Wages and Conditions Council for the Building Trades Industry. In the opinion of the members of Section I., these rules require amendment, as in their present form they consider them quite unworkable. Negotiations are proceeding in order to get them so altered as to be suitable to the special conditions which control gas-works contractors.

LIFE OF GAS-METERS JOINT COMMITTEE.

A report of this Committee was presented at the annual meeting of the Institution of Gas Engineers in June, and the survey of the work undertaken since the Committee's inception in 1914 shows that much useful work has been accomplished.

REFRACTORY MATERIALS RESEARCH JOINT COMMITTEE.

The report of this Committee presented at the annual meeting of the Institution of Gas Engineers in June dealt with Jointing Materials for Silica Refractories—Part I. The Committee are now working in conjunction with the British Refractories Research Association.

TAPER OF GAS-TAP PLUGS.

We have been able to arrange Conferences between a Joint Committee of the Institution of Gas Engineers and our Society, with reference to a standard taper of plugs for gas-taps for stoves and fittings; and the recommendations which have now been approved have been forwarded to the National Gas Council. It is noticed that the taper recommended has already been noticed in recent specifications.

STANDARD GAS VALVE FLANGES.

The recommendations submitted by the Institution of Gas Engineers and our Society are now being examined by the British Engineering Standards Association, with a view to their adoption.

STANDARD INVERTED INCANDESCENT GAS-BURNERS.

Progress has been made in connection with our application to the Patent Office for the registration of the trade mark "SOBGI;" and as soon as this has been completed, the necessary steps will be taken to issue licences for the manufacture of standard burners.

SCHEDULE OF STANDARD CHARGES PROPOSED BY THE RAILWAY COMPANIES.

This matter has been considered by the Council; and on the advice of Messrs. Tweedy and Holt, Railway Experts, of Halifax, formal objections have been lodged on behalf of the Society with the Court of the Railway Rates Tribunal against the schedules of standard charges proposed by the Railway Companies, in order to safeguard the interests of the members as a whole.

RETENTION OF EXCEPTIONAL RATES.

Lists of special rates may not be necessary at present, but it is considered advisable that individual members should proceed with the preparation of these, in case they are required at short notice. The result of the negotiations to avoid the necessity for the lists will be communicated to the members as soon as possible.

NATIONAL GAS EXHIBITION, BIRMINGHAM.

We congratulate all concerned on the great success of this exhibition, which was visited by Gas Associations and representatives of gas undertakings from all over the country. It showed the great advancement which has taken place, not only in the methods of gas manufacture, but in the design and development of appliances for its use both in the home and in industry.

During the last three days of the exhibition, the British Commercial Gas Association held a very successful annual conference in Birmingham, at which many of our members were present.

BRITISH EMPIRE EXHIBITION, 1924.

The scheme for the combined gas exhibit at this exhibition is being drawn up, and full particulars will be submitted to the members as soon as possible.

INCREASING MEMBERSHIP.

Efforts are now being made to increase the membership of the Society, as it is felt that there are a number of eligible firms who should be invited to join; and the necessary steps are being taken by the Council.

BULLETIN.

This has been issued quarterly, and we trust it has proved useful and interesting to the members. We would again remind them that contributions respecting any matters of interest to the Society will be cordially welcomed by our Secretary.

The PRESIDENT said they would all agree with him that Mr. Tilley had presented them with a very comprehensive and a very satisfactory picture of the Society's recent activities in a large number of useful directions. It disclosed to the members the valuable work done by their office bearers and Council, and it also disclosed the value of the Society, which was formed to carry out exactly the kind of duty it was doing. From this work good was accruing to the industry and to the community generally. The next item was a paper by the Chairman of the Council, and he would ask him to read it.

Mr. TILLEY then proceeded to deliver the following address:

THE "S.B.G.I."—ITS PAST AND ITS PROGRAMME.

I have chosen this subject for my paper because, though there may be a feeling that it would have been better to open a discussion upon some topic of social or technical interest, I think members will agree that, as the Society has now passed through the period of necessary development, and has arrived at mature age, its position and its affairs are well worthy of our consideration.

It is well to look back—whether the past has been good or bad. Serious contemplation of what has been done determines our action for the present or the future—whether the path being followed leads in the right direction, if it needs to be reconstructed, or if an entirely new one must be looked for. In our case there is cause for congratulation in that the path was so well planned at the start that it has led us slowly but surely to the position we hold to-day, when the Society can be said fully to represent that side of the gas industry which has for its aims the supply of suitable plant for the manufacture, distribution, and utilization of gas. The Society owes much to the men of vision who saw the advantage it would be for firms, whose main business it was, and still is, to specialize in this direction, to form themselves into a body which could cultivate a knowledge of one another's views upon matters of common interest, and speak with a united voice.

Of those who initiated the Society, among the most prominent were the late Thos. S. Clapham, John George Glover, Thomas Marsh, and John Mackay. They are no longer with us, but have a revered place in our memory; while Messrs. J. W. Broadhead, Chas. Clare, W. P. Gibbons, F. J. West, J. W. Wilson, and others are still able and do give us their valued support.

THE ORIGIN OF THE SOCIETY.

I believe the first suggestion that such a Society as ours should be formed, appeared in an article in the "GAS JOURNAL" for Dec. 6,

1904 [p. 755], written by the then chief editorial assistant (now Editor) to our good friend the late Mr. Walter King—Mr. Arthur Bezant, who supplemented that article by others which were very valuable to us in those days. The article which originated our Society was immediately followed by Mr. Charles Clare calling a meeting of all the British firms represented at the Earl's Court Exhibition; and that was the beginning of a life of good co-operative work for the industry. Mr. Walter King remained true to us, and a great help to the end of his days. To the "JOURNAL," to the Chairman, Mr. Clare, and the Council of those early days, we owe the strong constitution and rules which, with only a few minor alterations, guide us to-day. A Society, one of whose main aims (quoting from the Constitution) is "to promote just and honourable practices in the conduct of business as connected with the gas industries, and to suppress malpractices," must necessarily be of service so long as it adheres to these principles. In 1905 the Society was launched; and since then, with most eminent men as Presidents, who have given us the benefit of sound advice, active Councils, and an excellent permanent Secretary, we have become firmly established and able to "pull our weight" for the good of the gas industry as a whole.

As early as 1908 the late Sir George Livesey, who was then President, commenced his address by saying: "It was a happy thought which led to the formation of this Society. I approve of your action in forming the Society, because I believe it is right, and that it is not only to the advantage of the gas industry, but to industrial relations generally."

BEFORE THE WAR.

So much for the early days. I would next speak of the achievements of the Society. The war made such a mark upon industry that I think the history of our Society may, like that of the world in general, be divided into three periods—viz., before, during, and since the war.

Before the war, among matters dealt with were: Smoke abatement, Coal miners' eight-hours' Bill, Board of Trade Provisional Orders, Home Office and flueless gas-stoves, Sales of Gas Act, education of gas-fitters, waterways traffic (Royal Commission on Canals). The Manchester Gas Exhibition (1907) was held under the auspices of the Manchester District Institution of Gas Engineers and our Society; we took a full share in the National Gas Exhibition held in London in 1913; we co-operated with and became subscribers to the British Commercial Gas Association; the investigation into the life of gas-meters was started in conjunction with the Institution of Gas Engineers. The standard conditions of contract were drawn up and approved on behalf of the Institution and this Society. A most important research relating to refractory materials was commenced, and resulted in a standard specification being agreed to in 1912.

Later on I shall refer specially to other work of standardization. In 1909 we assisted to found the Livesey Professorship at Leeds University, and in 1911 it was decided to give prizes through the City and Guilds of London Institute for proficiency in gas subjects; and this practice has been continued each year since.

THE WAR PERIOD.

This was full of difficulties for the Society and for its members. Many member firms who were able and willing to assist with the manufacture of war material were, for the first few months, unable to obtain suitable contracts, owing to the organization of Government ordering departments not being able to keep pace with the unprecedented rapidity at which the requirements of the various war departments accumulated. The Council formed a Special Sub-Committee to co-ordinate the resources of members, and endeavoured to arrange for Government orders to be pooled with the Society, and so placed quickly in suitable directions. The endeavour did not meet with encouragement; but in time practically every firm became involved in the rush of manufacturing war munitions. Gun mountings, gun sights, shells, hydrogen-gas plant, tanks, aeroplane parts, scientific instruments, and a vast variety of other incidentals to the great campaign, were undertaken at short notice by firms with only their general engineering knowledge and the adaptability of our race to help them. The gas-furnace firms devised new types of apparatus for applying gas as a heating agent to industrial processes, in order that they might be carried through in the shortest time and dealt with in the greatest possible quantity. Our Hon. Treasurer, Mr. H. M. Thornton, referred to many of them in the paper he read before the Society of Arts on March 17, 1915.

To add to the difficulty of turning works normally employed upon gas apparatus and plant into factories for manufacture of war material, labour problems had to be overcome. Large numbers of workmen, many members of staff, and even principals, had joined the ranks at the first outbreak of hostilities. Those left behind had to adapt themselves to new processes; and, in many cases, entirely new kinds of manufacture had to be undertaken. Women and boys had to be instructed and accommodated in factories which had previously not used this class of labour.

I do not suggest that gas-apparatus manufacturers overcame greater difficulties than those in many other industries, but they certainly showed themselves to be very adaptable, energetic, and capable of the highest engineering and scientific skill. Directly arising from the war, our Society was called into consultation with reference to the shortage of railway wagons, Trading with the Enemy Act, conservation of coal, rationing of materials, devices for preventing glare from street and other outdoor lights, and dealt with such matters as financial restrictions by the Government, credit facilities by British banks, the provision of aid by the Ministry of Munitions for the extension of works and plant. Members of the stove section fitted, at short notice, cooking appliances in the majority of the national kitchens which were established, and in many Government canteens.

POST-WAR PERIOD.

We now come to the period after the war, and the change-round again—this time to the service of peace. After four years, during which no gas appliances had been purchased, except those which were absolutely essential to war needs, gas-works required new plant and general overhauling; but the authorities had in most cases been hard hit financially, and money could only be raised at a high rate of interest. This delayed the placing of orders which would have helped member firms to restart their usual business immediately after completing the reorganization of their works. Gradually, conditions became better, leading to many contracts for plant—some of them large—and, in turn, gas cookers, fires, and to a more limited degree lamps and burners, have been required.

Another matter in which the Society has interested itself is the movement to get the Imperial and Colonial Governments to consider the granting of British Empire Patents. The proposal is to be discussed at the Imperial Economic Conference which is now sitting. In conjunction with the London Chamber of Commerce, the Government was approached as to certain conditions which were considered unfair in its contracts; and these have to a considerable extent been improved. A Committee formed from members of the Institution of Gas Engineers and this Society drew up a report on composition, quality, and pressure of gas. This is bound to be most useful.

The "S.B.G.I." Directory was published in 1921, and has been a means of carrying information as to the products of our members to gas engineers and all likely to be interested throughout the world. It will soon be time to consider the preparation of the next issue; and the opinions of members as to its usefulness will be most helpful. Our other publication, the quarterly Bulletin, has become firmly established, and keeps members well informed on matters of special interest. I have only to refer you to its pages in order to supplement what I have said with regard to the past work of the Society. Two important papers have been prepared by members of sections Nos. 1, 2, 3, 10, and 12 upon "Carbonization," and "Tar Distillation and Sulphate of Ammonia Production Manufacture," which were submitted at the meetings of the Institution of Gas Engineers in 1920 and 1921. Each is recognized as the expression of the best practice at the time.

It is a pleasure to notice that facilities are frequently given to District Gas Associations to visit the works of member firms. It must be particularly useful to the Junior Associations to see in the course of manufacture apparatus they are called upon to use and recommend. They see the research laboratories and general evidence that our members are alive to the responsibility for producing only the best in their particular class of goods or plant.

IDEAS FOR THE FUTURE—TRADING.

Having sketched the history of the Society, and, I hope, reminded members that its past has been filled with endeavours to consolidate its position, while acting with dignity and honesty of purpose, I will now put forward some ideas for the future. I would strongly suggest that those sections which are most affected by competition from abroad should meet for the purpose of considering the steps that can be taken to improve the conditions of British manufacturers. To me these appear to be times when the law of supply and demand must not be relied upon too rigidly. In time, it is possible that this economic law may right matters; but the whole trading of the world is so upset by unprecedented conditions that, while it is acting, catastrophes may happen, and a position be created from which there would be no recovery. Such problems as currency, inflation, deflation, and protection cannot be discussed within the scope of this address; but I do think that the time has come when our Government must take more notice of the views expressed by the leaders of industry, and not rely solely upon the opinions of financiers, academic professors, and politicians. The outlook is very dark; and light can only come by searching among all classes of opinion for a solution that shall bring us out of the tangle we are in. This is clearly the duty of the Government. Each class is necessarily biased by its own limited experience, knowledge, and interests, so that it requires a strong central authority able to hold the balances and act promptly upon its decisions. As a nation we must not rely upon mere palliatives to reduce that serious menace—unemployment. We must aim to create trade in what is really wanted for everyday personal use by the peoples of the world, in preference to anticipating our needs in public improvements which too often may be termed luxuries, when considered in relation to the heavy financial burdens we are already carrying. The consideration of the best steps for immediate action as an Empire is proceeding; and it appears to be advisable to make use of the opportunity to bring forward the views of all sections which are likely to be affected. Much may be done by diagnosing the feelings of buyers, and fostering a preference for British goods. A considerable business is done by factoring foreign-made plant and goods; and every possible endeavour should be made to encourage trade in home-made

products—provided, of course, they can be made here economically. A matter that must continue to be most carefully watched is that of railway rates. It is only fair that too much shall not be expected in the way of economies by reason of the grouping of railways for some little time, but the effect of it might well be anticipated in order to help industry. Transport to-day is far too large a percentage of "oncosts," and all possible pressure must continue to be exerted to bring railway goods rates into closer relation with the needs of to-day. Nothing that retards the recovery of the country's trade position must be overlooked, and any tendency to give preferential treatment to railways must be guarded against.

STANDARDIZATION.

On the question of standardization, there must be definite views. So far the Society has been able, in conjunction with the Institution of Gas Engineers, to agree upon standard sizes of, capacity of, and connections for, meters; certain parts of gas-burners; dimensions and drilling of flanges; the taper of plugs of gas-taps to stoves and fittings; and the gauging of gasholder sheets and plates has been arranged. In connection with the standardization of parts of incandescent gas-burners, a trade mark has been applied for, so that all burners which conform to the standard specification may be stamped. In addition to the standard conditions of contract referred to in the earlier part of my paper, a standard form of guarantee for gas-meters has been approved.

We have also sent representatives to the committee of the British Engineering Standards Association to confer with them upon the subject of pipe threads. So far decisions have been come to, establishing the recognized Standard British Threads, and shortly the question of tolerances between the threads on pipes and in sockets will be further discussed. Incidentally I would call attention to the growth of the British Engineering Standards Association. It now has 426 committees, with a membership of close on 2000.

What has been done by our Society amounts to most useful work; and there are many directions in which our Sections may carry it further. I suggest that among other things which it is desirable to standardize are—the amount of the seal in the plugs of, and the method of testing, gas cocks and fittings; cup-and-ball joints; iron pipe fittings; tubes used in pendants, &c. In considering standardization, it is always well to remember that care should be taken that what is done does not hamper progress in development. It is generally quite safe to standardize such things as screw threads, the thickness of pipes in relation to their material, size, and purpose, and the socket of an electric lamp. Even these, however, should never be adopted without much experience and most careful examination.

To attempt to standardize the whole of an article is another matter. Once having done so, every additional one of such a product would be a reason for not adopting an improvement of a part; and after a time the capital invested would become so great that few would face the cost of replacement. The inventor wants a ready market, not a reluctant one. The manufacturer must not be allowed to become stagnant by a present success, but must always be on the look-out for better methods and improvements in design. A market crowded with standard articles would stifle all endeavour. In the case of our industry, to standardize the whole of a gas appliance would delay improvements, and make the way easier for our rival—electricity. The approved standard gas-burner is only standardized so far as parts are concerned, and does not restrict development in any way.

PUBLICITY.

Proposals for collective advertising to the public, either by way of exhibitions or through the Press, are from time to time put before us. It appears to me that any form of publicity, which has for its purpose the creation of a general demand, is of no service to a manufacturer who does not at the same time take means to ensure that his own specialities have a fair chance of being selected when the demand is created. Manufacturers who do not deal direct with the public (and the members of this Society are of that class) have therefore serious problems to consider. How far can they support collective advertising? If it is their province to embark upon it, how should it be carried out? How can the individual firm ensure a share of the orders? These are questions which arise; and I hope members will give them close consideration.

The British Empire Exhibition next year will be a means for collective advertising, in which it is contemplated our members will take an active part. So far, arrangements have been made for a Gas Exhibit in a portion of one of the Machinery Halls, which will provide an area of 12,500 sq. ft. A General and an Executive Committee have been appointed, and will almost immediately be dealing with the details necessary for completing the scheme. The electrical industry is contemplating a far larger display, so it is most important that what is done shall adequately represent the position gas holds.

NEW OFFICES.

With the new offices open for the use of members, a new era in the Society's work may be said to have commenced. I hope every member will feel that they are there for him; for I am sure that the more we attach ourselves to the central body, the stronger it must become. The more we interest ourselves in the general welfare, the more we shall progress as individuals. I repeat that we owe much to those who were instrumental in establishing the Society. It now rests with us to see that our programme is always full of projects which will keep us on the up-grade. This cannot be assured without the goodwill and personal help of all.

Mr. TILLEY, referring to the statement towards the end of the paper to the effect that so far arrangements have been made for a gas exhibit in one of the machinery halls at the British Empire Exhibition, which will provide an area of 12,500 sq. ft., added: "I may mention that this arrangement has not been made by the Society, but by the gas authorities themselves; and it is open to us to determine later how far we shall go in with them in regard to that exhibition. I want to say this, in order that there may be no misapprehension as to our position."

Discussion.

The PRESIDENT (Lord Weir of Eastwood) said he was sure they would all agree with him that they had had a most interesting paper from Mr. Tilley. It was a paper that not only told them of the past, but also reminded them of their duties and of their responsibilities for the future. He did not think any of them would expect him personally to contribute to the discussion, which ought to be a healthy one; but there was one matter Mr. Tilley had referred to which he (the President) would like in a sense to endorse.

BRITISH ENGINEERING STANDARDS ASSOCIATION.

He had called attention to the growth of the British Engineering Standards Association. He had told them that that Association had now 426 committees, with a membership of close on 2000. Perhaps he (the President) might be allowed to add that this great membership was entirely voluntary. It was a wonderful example of voluntary effort; and he would draw the attention of all engineering firms, and the firms in the gas industry, to the fact that the financial position of the British Engineering Standards Association made an appeal to everyone, and this appeal should be recognized, because hitherto the burden had been borne by a comparatively small field of contribution. Mr. Tilley had quite rightly pointed out the dangers of standardization. The British Engineering Standards Association now had the most remarkable and comprehensive experience of any body in the world, to safeguard people against any insane standardization; and it was quite safe to entrust them with any work. The Association would certainly give full weight to the objections raised by Mr. Tilley.

THE BEGINNINGS OF THE SOCIETY.

Mr. CHARLES CLARE felt he would, as the first Chairman of the Society, like to add something to the beginning of the paper. Perhaps it would interest the members to hear about the time just prior to the article in the "GAS JOURNAL" for Dec. 6, 1904, to which reference had been made. The Society arose in this way: At the Earl's Court Exhibition in the autumn certain questions cropped up which were of interest to all the exhibitors, but there was no committee, nor anything of that sort, which could take these matters into consideration. Therefore Mr. Thomas Marsh and Mr. John Glover went to him and suggested that they should go round, call the exhibitors together, and form a sort of committee for the exhibition. This was done, and the late Mr. Alexander Neil (who was at that time Chairman of Messrs. Fletcher, Russell, and Co.) was appointed Chairman. Owing, however, to his absence and distance away from London, it was felt that someone living in town should take his place, and he (Mr. Clare) was chosen to do so. It was then resolved that, should any other committee meeting be required, it would be held. In the meantime, Mr. Bezant, Mr. John Glover, Mr. Marsh, and himself had various conversations as to the advisability of continuing this Committee in an enlarged form—if possible, as an association; and there was a further committee meeting held, if he remembered rightly, in December or at the end of November, at which some of the results of the exhibition were summed up, and he put forward the suggestion that there should be a gas-works contractors institution. This was not acceptable to the meeting at that time. He seemed to be filling the rôle of a prophet, which was not a very satisfactory one. It was decided that that meeting should be adjourned and a further meeting held in the early part of 1905, at which it should be definitely decided whether or not there should be an association. In the meantime, he got into communication with a man who had been one of the greatest friends the Society had ever had—the late Mr. James Helps, of Croydon. It was due to a very great extent to that gentleman's efforts among the gas engineers that the way was paved for the formation of the Society. Well, in the early part of 1905 this adjourned meeting was held, in the very building in which they were that day assembled; and after he (Mr. Clare) had explained what he thought would be the advantages of such an organization, it was proposed by the late Mr. Henry Davis, of the Davis Gas-Stove Company, that the Society should be formed. He simply mentioned this as really being the actual start of the Society, and as leading up to the events which followed from the issue of the "GAS JOURNAL" for Dec. 6, 1904. They owed Mr. Bezant very many thanks for the help he gave them in drawing up some of those rules and regulations which the members had heard about, and also in suggesting to them their first President, the then Mr. Dugald Clerk. ["Hear, hear."] He thought, too, they owed that gentleman a very great debt of gratitude, because he was the first of an illustrious line of Presidents. There was just one other matter about which Mr. Tilley, he thought, did not know—that in those early days he (Mr. Clare) endeavoured to arrange a conference between the Institution of Gas Engineers and representatives of the two great societies of architects, to see whether they would join them in drafting certain rules for a better supply of gas to houses as they were built, and so on. Unfortunately these efforts were turned down, because at that time the architects did not think, as a professional body, they were justified in being so associated with the traders. Whether the idea could be revived again at the present time, was another matter. He must say that for the first four years after the formation of the Society there was a great deal of ploughing to be done. At one time, he did not think it was really going to be a success; but the end had certainly justified the trouble that the early

members of the Council bestowed upon the work, and he was sure the Society would go on to greater things yet.

A SUGGESTED INVESTIGATION REGARDING GASHOLDER CONSTRUCTION MATERIAL.

Mr. R. J. MILBOURNE thought it would be of advantage if from time to time they discussed technical matters. Mr. Tilley's address mentioned the very valuable work which was done in connection with the investigation into the life of gas meters, and this led him to make a suggestion. It occurred to him that the usefulness of the Society might be considerably increased if some specialized research work were devoted to various subjects connected with the Heavy Section. The beginning of the present century had heralded the advent of mild-steel sheets, and the twenty to thirty years' experience of this material for gasholder sheeting had conclusively proved its deficiencies and limitations, and had laid up a string of troubles for the gas engineer which was reflected in the large number of holders in the country which had had to be repaired or entirely re-sheeted in recent years. It was common knowledge, however, that quite a large number of holders which were erected fifty, sixty, or even seventy years ago, in which the thin sheeting of the holder was constructed of wrought iron, had withstood the ravages of time, and were practically as sound as when first erected. The life of a gasholder constructed in mild-steel sheets did not appear to exceed on an average twenty to twenty-five years, whereas with the old-fashioned sheets made from reliable Staffordshire iron, the sheeting could be said to have fully four times the durability. These facts had led gas engineers and designers of gasholders to turn their attention once again to specifying and providing wrought iron. Within recent years, owing to the shortcomings of mild steel, an effort had been made to grapple effectively with the corrosion of gasholder sheets, and the gas-engineering industry had been attracted to "Armco," which was an American production, and was a specially prepared steel having essentially durable qualities. This product was now very frequently specified in cases where local atmospheric conditions had proved detrimental to mild steel sheets. The matter was pressing for another, and more serious, reason. Of late years it had been found that with a mild-steel sheet an excessive amount of corrosion was taking place inside the gasholder; and as this internal corrosion could not be seen and dealt with in the same way as external corrosion, the whole subject appeared to be one of vital importance to the industry. This internal corrosion might be due in some measure to the composition of the gas, which might be the result of modern methods of carbonization or purification; but it seemed to him that it was very closely allied to the trouble the gas-meter makers had experienced in their particular case. Bearing in mind the vital importance of the subject, he wished to put forward the suggestion that a committee of investigation should be set up, consisting of members of this Society and the Institution of Gas Engineers, to investigate the matter fully; and no doubt such a committee could come to a decision as to the relative claims of "Armco" and wrought iron. He felt sure that such work would benefit not only the members of their Society, but the gas industry generally. If they had had the advantage of Sir Robert Hadfield's presence that afternoon, he was sure he would have been able to give them some valuable information. "Armco" was a very expensive sheeting, and unfortunately it had to be purchased from America, to the disadvantage of this country, because every penny sent from here to America had the effect of depreciating the value of the pound sterling. Sir Robert Hadfield would no doubt have been able to tell them whether this "Armco" iron was really any better than, or whether it was even as good as, the old-fashioned Staffordshire wrought iron which they had been accustomed to use. He thought the Society should adopt his suggestion, to increasing its own usefulness, and benefiting the gas industry considerably.

Mr. SAMUEL CUTLER said he would like to take the opportunity of endorsing Mr. Milbourne's remarks. He had touched upon a subject of the greatest importance to the gas industry. As a gasholder manufacturer, he could corroborate every word Mr. Milbourne had said. It was quite a common thing for a gasholder to cost £40,000 or £50,000, and there were many contracts in hand to-day involving even larger sums; and when one considered that perhaps in twenty or thirty years these holders might require repair, he did think the question of an inquiry into this subject (on which there was a very great divergence of opinion) might be taken up by the Council of the Society. One came across holders built sixty or even seventy years ago which, though he would not say they were in a state of perfect preservation, were vastly better than others built twenty or twenty-five years ago. So they would see that, with the vast amount of capital invested in gasholder construction to-day, this was a most important matter. Before sitting down, he would like to thank Mr. Tilley for his excellent paper. At the luncheon, a statement had been made as to the decay and waste that was going on. He would remind them that it was a law of Nature that there was no life without decay, whether it were an institution, a firm, or anything else; and it depended upon the vitality of the institution or body to repair this waste. Their Society had been in existence now for eighteen years, and they had to repair the waste that had been going on.

THE NEW OFFICES.

He thought the Council of 1923 had done the right thing in entering upon what he regarded as a fresh order of things in regard to the new offices. Every one of the members should try to use these new offices for his own convenience. If members wished to make appointments there with anybody, there were rooms for the purpose. There were rooms also for large committee meetings of twenty or thirty persons, and all the necessary arrangements could be made if they communicated with their very excellent Secretary, who was now installed there to run the place to the very best advantage of the Society.

Mr. CYRIL G. DAVIS said he would like to add a few words of appreciation of Mr. Tilley's paper. The subject was a very happy one and a very wise one at the present juncture, because some of them were apt to forget the important work that the Society had carried out. It would do good if this paper were widely read, for the valuable assistance that the Society was to the gas industry as a whole was not universally recognized. They should all pull together, for they knew perfectly well that electricity was making great strides, not only for lighting, but also for other domestic purposes. As an instance of this, he heard only the previous week of a not very large town where an electrical exhibition was held, and at least 200 electric cookers were disposed of. This was very significant. They must work hard to make headway, and they must all work together.

The PRESIDENT remarked that perhaps they would allow him to say just one word personally in regard to what Mr. Milbourne and Mr. Cutler had spoken about. He was very sorry indeed that he could not take Sir Robert Hadfield's place in advising them on the subject of "Armco" iron. He would expect that it would have a particular application rather than a general one. He was sure the suggestion made would be welcomed and taken very carefully into consideration by the Council, because it seemed to him that the Society could act as a very effective link in collecting the data from the user and transmitting it to the particular Scientific Research Association who would carry out the research when they had the necessary data to go upon. It was not a case of setting up new machinery. There was plenty of machinery available for dealing with these matters, if it was properly co-ordinated, as it could be by means of a small committee formed by the Society. He would ask Sir Arthur Duckham to propose a vote of thanks to Mr. Tilley.

Sir ARTHUR DUCKHAM, K.C.B., said he felt that, instead of being asked to propose a vote of thanks at this meeting, somebody ought to be standing up and proposing a vote of thanks to him, because he was responsible for their President, and he regarded it as one of the finest bits of work that had been done by any member of the Society for the Society. ["Hear, hear."] They all realized the wonderful work that the President had done for the country during the war; and now they had seen for themselves something of his determination, methods of business, and so on. As a Society, they were to be congratulated, and very heartily congratulated, on their Presidents—if he might leave his own name out—and on their Chairmen of Council. That they should be able to get a man of affairs with great industrial responsibilities, to come and be their President, was a very fine thing. As he had said, they were also to be congratulated upon their Chairmen of Council, who had carried through their work in an excellent manner, and had always given the members satisfaction. There was a great treat in store for them next May, when Lord Weir would deliver his Presidential Address; and he trusted that all members of the Society would be present as heads of their firms, and that they would also, as far as possible, bring their chiefs of departments on that occasion, because it should prove to be a meeting of the very greatest interest, not only to their own more or less narrow circle, but to the industrial world as a whole.

WHAT INDUSTRY NEEDS.

As to Mr. Tilley's paper, they were very grateful to him for it. The present was a time of trouble; but really things were not so bad as they were made out to be. As had been already said, what they needed was stabilization. They wanted to be left alone, and not to be interfered with. They did not want all sorts of new and sudden alarums and shocks burst upon them. They had suffered and worked hard, and were coming through. Trade was better to-day, without question; and the coming year, with the great British Empire Exhibition, would undoubtedly bring a boom. He would suggest, therefore, that politicians should leave them alone at present, because none of their nostrums could help them for long periods of time, and meanwhile they were themselves grappling with great problems. One could wish that these great promises and forecasts of new work that was coming forward—such as railway work—could be brought to fruition more quickly. What was wanted was overtime in the drawing offices, so as to get the work itself actually in hand. It was all very well to say it was going to be done, but they knew how long it took to put the work into the shops.

NOW IS THE TIME TO DO WORK.

He had been one who had suggested and pressed for co-operative advertising. He would like the Society to advertise co-operatively for more work to be done. Why should not the municipalities and the great public undertakings make arrangements for improving their works and bringing them up to date, and thus rendering them more efficient? Now was the time to do the work. Prices were low; he thought they would not go lower. He saw no prospect of labour charges being further decreased. The men were working well, which was a great thing. Firms were able now to put-in prices for jobs which were certainly proportional to pre-war prices, and perfectly fair and proper prices. What they all wanted was work and more work. He believed they as a Society could do a great deal, by co-operative advertising and publicity, to influence work being put in hand. There was no room for sections in any individual industry; there was hardly room for sections in industry itself. One side had no greater position or importance than another. All had the same object in view; and all should join hands to attain this object. He was at the Coke Oven Managers' dinner a few days ago, and he pointed out then that a coke-oven manager first of all had to possess a knowledge of coal mining and the qualities of coals; secondly, he had to be a mechanical engineer and to an extent a civil engineer; he certainly had to be an electrical engineer. Then he had to be a chemist, because he must understand the recovery and working-up of bye-products, and so on. In no direction to-day was there any sharp dividing line. Even gas and electricity overlapped, and he looked forward to the day when they would be working hand in hand. The President had told them that he had just come back from Chicago, where he saw that great man Mr. Insull, who controlled the supply of gas and electricity over an area which approximated to this country. Now there was absolutely healthy competition in that area; but the uses to which electricity was put were the best uses of electricity, and the uses to which gas was put were the best uses of gas. The public were certainly going to use electricity when it paid them to do so, and when it was more convenient; and they were going to use gas where it was best. This they could not get away from

GAS AND THE WORLD POWER CONFERENCE.

Next year there was going to be, at the British Empire Exhibition, a World Power Conference. Lord Weir and Sir Dugald Clerk were on

the Committee. Now, how could world power be considered without the gasification of coal and the use of gas being taken into account at the same time? Gas was one of the essentials of world power. Yet other than their two Presidents—and they could not claim them as absolute gas men—there was no gas man on that important organization, though he believed an appeal had been made for papers to be read on gas manufacture. To his mind, there was an opportunity of coming together and seeing how these two great industries could help each other. By all means retain competition, which must always be there. Competition existed between those present at that meeting as members of the Society. They all pushed their own articles, but they worked together for the benefit of the Society and for the benefit of their clients. They were under a deep debt of gratitude to Mr. Tilley, who, in his unassuming way, had done more for the Society than many who might have more forceful ways. He had gone among the members of the Society, and had done just that quiet work which was necessary for the happy and successful running of such a body as theirs. He moved a hearty vote of thanks to him.

Alderman F. TEMPLER DEPREE said he had been asked to second this vote of thanks to Mr. Tilley; but after the very able way in which it had been proposed, it was not necessary for him to say much. He would, however, like to comment upon one reference which had been made. This was to the work that had been lately done by the Life of Gas Meters Committee, of which he himself happened to be a member. During the investigation made by the Committee, the question of "Armco" steel came up, and one thing brought to the notice of the Committee was that the "Armco" which had been brought into this country since the war was of very different nature from the material which came here before the war. This was proved by the tests of the Chemist—and they had fortunately the assistance of the Gas Light and Coke Company's Chemist through the whole of this investigation. They had specimens of "Armco" plate brought up before the Committee, and there was evidence there of how little it would stand in comparison with the old "Armco" plate. He mentioned this because he thought further investigation of the kind, as suggested by Mr. Milbourne, would be most valuable to gas undertakings. Sir Arthur Duckham had referred to the proposed World Power Conference at Wembley next year, and had said that, so far as he knew, the gas industry had not a representative. Here was something for the Society to move in, either separately or in conjunction with other bodies. They must look for the man they wanted to represent the gas industry; and it appeared to him they had with them that afternoon a very good man—Sir Arthur Duckham himself. ["Hear, hear."]

The PRESIDENT thought it only right that he should refer to what Sir Arthur Duckham had said regarding the Conference on World Power. It was true that he (the President) was a member of the Grand Council, and, quite frankly, he had not appreciated the direct connection which had been pointed out between gas and power. He would at once take the matter up with the authorities. They must have a paper, and he did not think it could come from anyone better than Sir Arthur Duckham. He would make this definite suggestion. [Applause.]

The vote of thanks having been heartily passed,

Mr. TILLEY acknowledged it, and said he thought they had all been much interested in what Mr. Clare had been able to tell them in amplification of what was stated in the paper. Mr. Clare was really the founder of the Society, and knew more than anyone else of the inner working right from the commencement. Therefore what he had told them was something coming from the fountain head. With regard to Mr. Milbourne's remarks on the subject of special research in the matter of gasholder sheeting, these were of the greatest interest, and he was glad his paper had been the means of bringing forward the suggestion made. The Council, he would undertake to say, would ask Mr. Milbourne and those interested in that particular inquiry to formulate something which would enable them to get some definite work done on the lines proposed. As to "Armco" iron, he would like to say that Sir Robert Hadfield, during the luncheon, had asked him what progress these special steels were making in this country. He was able to tell Sir Robert from his own experience that they had been able to make use of stainless steel wires in a very special way, and had found them to be wonderful in their performance. Probably Sheffield could do anything that America could; and he did hope—for he was a Britisher right through—that too much reliance would not be placed upon these much advertised productions of other countries. If they made inquiries, they would generally find that in this country there was something equal to, if not better than, that produced abroad. He thanked Sir Arthur Duckham for the way in which he had spoken.

A REGRETTED ABSENTEE.

The SECRETARY (Mr. Arthur L. Griffith) announced the receipt of a telegram from Alderman Fred. West stating his inability, owing to pressure of business, to attend the meeting. He had fully intended to come, and he (Mr. Griffith) knew how much he must regret not being able to do so. Had he been present, he would probably have taken part in the discussion.

THE NEXT PRESIDENT.

Mr. TILLEY, during his reply to the discussion on his paper, said he had an announcement to make which he was sure would give the members the greatest pleasure—namely, that Mr. Milne Watson had agreed to follow Lord Weir in the Presidential Chair. [Applause.] They knew that Mr. Milne Watson was a great friend of the gas industry, and he had a surprising grasp of everything connected with it, and of the endeavours of the Society, of which he thought most highly. He had told him (Mr. Tilley) that he took a great interest in the work of the Society, and that he regarded it as an honour to be asked to become its President.

THE PRESIDENT THANKED.

On the proposition of Mr. TILLEY, a hearty vote of thanks was passed to Lord Weir for presiding.

Before separating, the members took tea together.

THE MANUFACTURE OF HYDROCHLORIC ACID AND SALTCAKE.*

This treatise forms Vol. V. of the series of volumes dealing with "The Manufacture of Acids and Alkalis," edited by Dr. A. C. Cumming; the whole work representing a new edition of Lunge's "Sulphuric Acid and Alkali," greatly extended and completely revised.

The contents include chapters on:

1. The properties of sodium chloride, sulphate of soda, and hydrochloric acid.
2. Raw materials.
3. Manufacture of saltcake and hydrochloric acid from sulphuric acid and salt.
4, 5. Various other processes.
6. Manufacture of pure sodium sulphate and Glauber's salt.
7. Absorption of hydrochloric acid.
8. Manufacture of hydrochloric acid from chlorine.
9. Manufacture of hydrochloric acid by other than ordinary methods.
10. Weak acid, condensation, yields, costs, &c.

The book is very well written and illustrated, and stands as a standard work on the subject. It will, perhaps, not be of great interest to most readers of the "JOURNAL," as the subject is not directly connected with the gas industry.

W. B. D.

* "The Manufacture of Hydrochloric Acid and Saltcake," by Alexander Charles Cumming, O.B.E., D.Sc., F.I.C. Published by Messrs. Gurney and Jackson, No. 33, Paternoster Row, London. Price 31s. 6d. net.

RAW MATERIALS FOR THE MANUFACTURE OF SULPHURIC ACID AND SULPHUR DIOXIDE.*

This book is Vol. I. of a series of volumes on "The Manufacture of Acids and Alkalis," representing a new edition of Lunge's "Sulphuric Acid and Alkali," greatly extended, completely revised, and largely rewritten under the editorship of Dr. A. C. Cumming.

The other volumes of the series are entitled:

"The Manufacture of Hydrochloric Acid and Saltcake." By A. C. Cumming, D.Sc., F.I.C.

"The Manufacture of Nitric Acid and Nitrates." By Allin Cottrell.

[The above are now ready.]

"The Manufacture of Sulphuric Acid (Contact Process)." By F. D. Miles, M.Sc.(Lond.), A.R.C.Sc., F.I.C.

"The Concentration of Sulphuric Acid." By J. W. Parkes, M.Sc., A.I.C.

"The Manufacture of Sulphuric Acid (Chamber Process)." By Wilfrid Wyld.

"The Fixation of Atmospheric Nitrogen." By Joseph Knox, D.Sc.

The last four treatises are stated to be in course of publication. The book under review is published in the style well known to readers of Lunge's text-books. The printing, paper, and illustrations are of excellent quality. The illustrations number only seventy-nine. It would be an assistance to the reader if the figures were briefly indicated or described, as well as numbered. For example, instead of "fig. 46," it would be better to have "fig. 46—Wedge Furnace." In perusing the text, one finds rather too many cases of what may be called Germanized English, where the translation from the original German is too literal or where German style is retained. It is very difficult to avoid this fault. The gas engineer will be particularly interested in the account of spent oxide, pp. 137 to 142. He will be inclined to smile, however, when he reads that the oxide is regenerated about thirty or forty times before the sulphur has accumulated to such an extent that it has to be replaced by fresh oxide. We should say that five or six times would be sufficient under proper management.

Patent specification numbers, annual production figures, and other useful matter are brought up to date; and the book will be found exceedingly helpful to the acid-works manager in the first place, but also to the gas engineer and chemist.

W. B. D.

* "Raw Materials for the Manufacture of Sulphuric Acid and Sulphur Dioxide," by Wilfrid Wyld. Published by Messrs. Gurney and Jackson, No. 33, Paternoster Row, London. Price 36s. net.

The "Coventry" Chain Drive.—"Engineering" for the 9th inst. illustrates a chain drive recently supplied by the Coventry Chain Company, Ltd., to the Grovesend Steel and Tinplate Works, of Gorseinon. The power transmitted is 150 H.P., the reduction being from 250 to 50 revolutions per minute. The chain is of 2½ in. pitch, and is known as a 9 × 10 combination; these figures indicating the number of blocks placed side by side in alternate rows, and assembled so as to make an over-all width of chain of 12·6 in. over the ends of the rivets. The actual width over the links is 11·5 in. The breaking strain for this chain is 168,000 lbs., and the effective rivet wearing area amounts to 4·66 sq. in. The chain weighs 65·4 lbs. per foot run.

AT THE LOWER SYDENHAM WORKS OF THE SOUTH SUBURBAN GAS COMPANY.

A VISIT, in which over a hundred members participated, was paid last Saturday afternoon by the London and Southern District Junior Gas Association to the Lower Sydenham Works of the South Suburban Gas Company. So long have the Association been in existence, and so cordial have the South Suburban Gas Company proved as hosts, that this was the fourth visit paid to these works, but it is safe to say that on no previous occasion was the party so large. This was the first visit of the present session, and its success augurs well for future fixtures.

The visitors, led by the President (Mr. Walter Grogono, of the Gas Light and Coke Company) and the Hon. Secretary (Mr. Leonard Lacey), assembled at the works entrance, where they received a hearty welcome from Mr. John Terrace, the Company's Chief Engineer. Thereafter a couple of hours were spent by small parties in a tour of the works, during which much useful information was gathered by seekers after knowledge from the following, who (in addition to Mr. Terrace) acted as guides: Mr. F. G. Gorman (Deputy Engineer), Mr. A. V. Hendrickson (Chief Chemist), Mr. A. G. Harding (Chemist), Mr. J. H. Goldsmith (Technical Assistant), Mr. J. K. Grant (Technical Assistant), Mr. E. F. Stephens (Chemist), Mr. W. G. Waller (Chief Foreman, and Employee Director), and Mr. J. E. Smiles (Superintendent of the Water-Gas Plant). The task of explaining the various features was greatly simplified by a concisely drawn-up brochure, a copy of which was handed to each visitor. From this the following particulars have been taken.

DESCRIPTION OF THE WORKS.

The South Suburban Gas Company—formerly called the Crystal Palace District Gas Company—dates back from the year 1854. In 1912, the Company purchased the undertakings of the Bromley and Cray and the West Kent Companies; the Dartford Company was purchased in 1919. The area of the district of supply is now 144 square miles.

The land covered by the works at Lower Sydenham is 45 acres in extent, and the total manufacturing capacity per 24 hours is:

Coal gas	9	million c.ft.
Carburetted water gas	4½	,, ,,
Total	13½	,, ,,

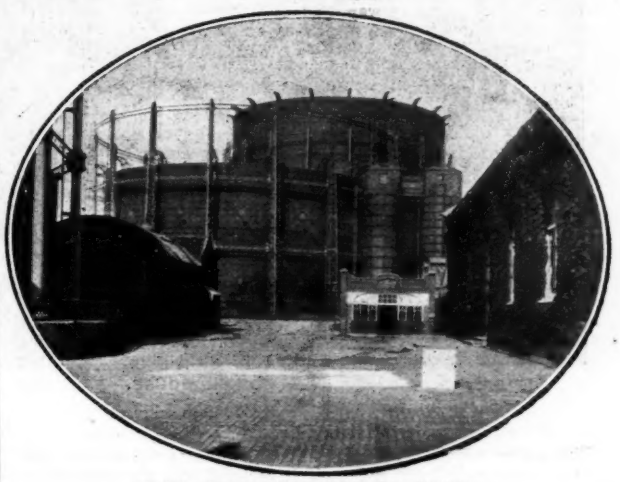
The Company have works also at Bromley, St. Mary Cray, Crayford, Erith, and Dartford.

CARBONIZING PLANT.

There are four retort-houses, three of which are now in use. No. 1 has a capacity of 80 tons of coal per 24 hours, and contains 70 retorts on the inclined system, 21 in. by 16 in. at the upper end, and 24 in. by 16 in. at the lower, by 20 ft. long, in ten beds of sevens, heated by furnaces on the regenerative principle.

No. 3 retort-house has a capacity of 360 tons per 24 hours. It contains 260 retorts on the horizontal system, 22 in. by 16 in. by 22 ft. long, in 26 beds of tens. The retorts are charged and discharged by Drake's machinery, worked by electricity generated in a central power station. The coke is removed from the house by means of an endless chain conveyor of the De Brouwer type, and loaded direct into railway trucks, or on to the heap in the yard. The coal is brought in railway wagons, and mechanically emptied into an elevator, which raises it into overhead hoppers for feeding the charging machine.

No. 5 retort-house has a capacity of 290 tons per 24 hours. It contains 170 retorts on the horizontal system, 22 in. by 16 in. by 22 ft. long, and 60 retorts 22 in. by 16 in. by 20 ft. long. The latter retorts are tapered to the discharging end to 24 in. by 16 in. These settings, like those in No. 3 retort-house, are charged and discharged by Drake's machines. The coke is removed by a De Brouwer conveyor, and there is additional plant for delivering it direct into railway wagons.



VIEW NEAR ENTRANCE TO WORKS.

All the settings, 59 in number, have producers fitted with the "Sydenham" grate.

Gas made per ton	70 therms.
Total inerts	14 p.ct.
Coke made for sale	10½ cwt. per ton of coal.

COAL GAS PURIFYING PLANT.

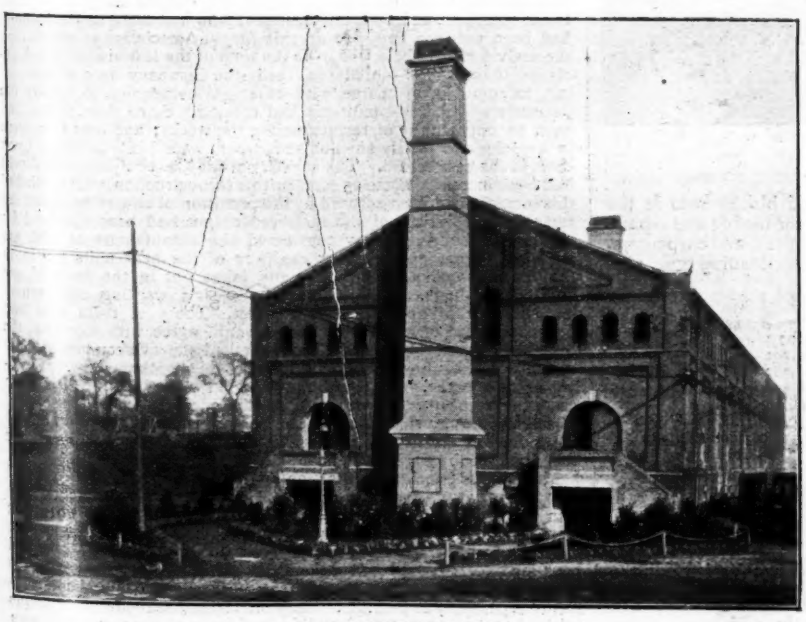
In one section of the works the gas, leaving the exhausters, passes through a tar separator, Walkers' purifying machines, Livesey washers, and finally a tower scrubber. In the other section it passes through Livesey washers and tower scrubbers. The gas from both sections then passes through purifiers containing oxide of iron. There are seventeen of these, each 40 ft. by 22 ft.

WATER-GAS PLANT.

The water-gas plant consists of six sections, each of 750,000 c.ft. per 24 hours capacity. The plant includes three sets of turbine air blowers, three sets of exhausters, two hydraulic pumps, three Weir pumps, and various oil and water pumps.

Adjoining this building is the boiler-house, containing four Lancashire boilers 8 ft. diameter by 30 ft. long; and at the back is a set of five purifiers 40 ft. by 22 ft., 5 ft. deep, and two meters, each of 100,000 c.ft. per hour capacity.

There are also two oil tanks 60 ft. diameter by 25 ft. deep, each having a capacity of 442,000 gallons.



No. 5 RETORT HOUSE.

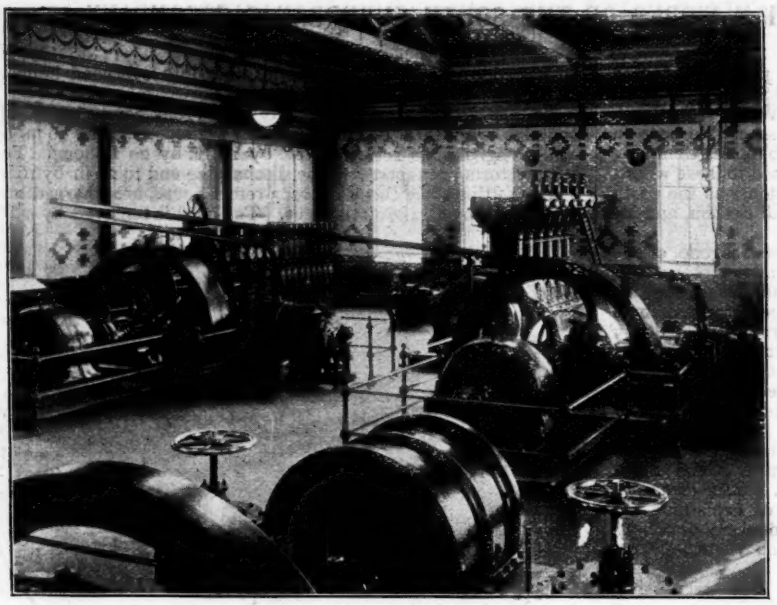
POWER-HOUSE.

The power-house contains two sets of exhausters, each 300,000 c.ft., and one set of 250,000 c.ft. capacity per hour; one air compressor for supplying power to the various parts of the works; two single-cylinder gas-engines, 95 H.P. each, and one six-cylinder gas-engine, coupled to dynamos for generating current for driving retort-house machinery; and two Weir pumps, each having a capacity of 30,000 gallons per hour.

Adjacent to the power-house are the condensers, washers, and scrubbers.

OTHER PLANT.

In the coal-gas meter house there are four meters of a total capacity of 370,000 c.ft. per hour. The total capacity of the gasholders is 8 million c.ft.; the largest containing 3⅓ million c.ft. There are three exhausters for pumping to the Bromley holders. The sulphate of ammonia plant is capable of manufacturing 7 tons of sulphate per 24 hours.



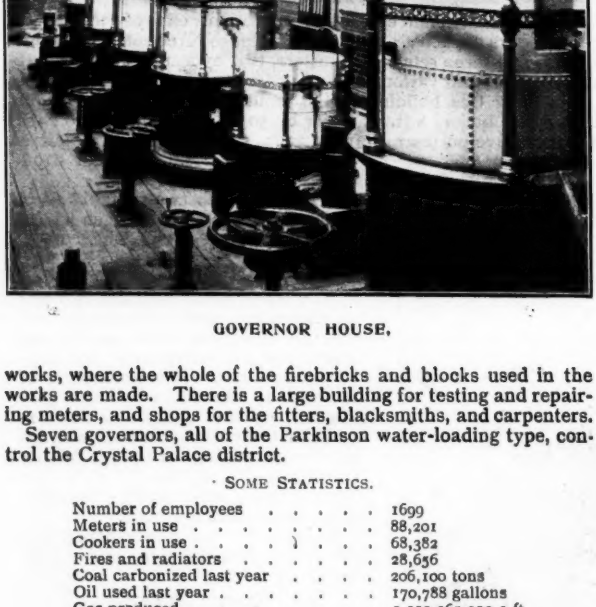
POWER HOUSE.

WATER SUPPLY.

The water required for domestic and other purposes on the works is obtained from the Pool River and two artesian wells. The water is pumped into tanks at the top of the water tower, which is 85 ft. above ground level. The water for the boilers is softened in a "Kennicot" plant capable of dealing with 250,000 gallons per 24 hours.

SHOPS AND FIREBRICK WORKS.

There is a large shop for storing and repairing gas-fires and cookers; and adjoining the stove repairing shop is the firebrick



GOVERNOR HOUSE.

works, where the whole of the firebricks and blocks used in the works are made. There is a large building for testing and repairing meters, and shops for the fitters, blacksmiths, and carpenters.

Seven governors, all of the Parkinson water-loading type, control the Crystal Palace district.

SOME STATISTICS.

Number of employees	1699
Meters in use	88,201
Cookers in use	68,382
Fires and radiators	28,656
Coal carbonized last year	206,100 tons
Oil used last year	170,788 gallons
Gas produced	3,319,065,000 c.ft.
Coke produced	130,605 tons
Tar produced	1,959,000 gallons
Liquor produced	5,905,000 gallons

IN THE LIVESEY MEMORIAL HALL.

The inspection over, the members found tea awaiting them in the handsome Livesey Memorial Hall, which is fitted up to provide a most attractive social club for the employees. Here Mr. Terrace, who had devoted the whole of his afternoon to the members, took the chair, and subsequently addressed those present.

Mr. TERRACE said that, on behalf of his Chairman and Directors, he desired to bid the Association a hearty welcome to the works. The Chairman of the Company, as they all knew, had for many years taken a keen interest in all institutions connected with gas, and he was more than pleased that the London and Southern Juniors should favour the South Suburban Gas Company with a visit at the beginning of this session's work. It was not his (Mr. Terrace's) intention to say very much about the works themselves, as he had it in mind to ask others to make a few remarks on this subject later on. But he felt that, on his own behalf, he must thank them very much for coming to Lower Sydenham. He trusted they had had an enjoyable time, and had obtained all the information they might have thought it wise to ask for.

DECENTRALIZATION OF CONTROL.

He felt that, at such a gathering of Juniors, he ought to say something on some particular point. Those connected with the Company were very proud of their works at Lower Sydenham, but they were more proud still of the way in which they were run; and it was to this aspect that he would address himself. They were not believers in a "one-man show," and had tried for a number of years to run the works on truly co-operative lines. A man who stood, or sat, at the head of things, and thought he was doing all the work, was foolish; he did not deceive anybody but himself. It was quite impossible for any single man to run a business; but as to the precise amount of control he should allow those under him to exercise, there was a wide difference of opinion. When he went to Lower Sydenham four years ago, he found that, on Mr. Gorman's initiative, they had started to decentralize the control of the works—as far as possible to divide the works up into certain sections, so that each foreman had real charge of the part that he had to look after, and, within certain limits, was empowered to act on his own initiative. This did not, of course, mean that he could do just as he liked. But the main idea of the thing then, and as it had worked out since, was that, if they developed the initiative and the ability of a man, this would react on the man above him, and so on, right to the top. Thus, when they were putting in any new plant, or breaking away from the beaten track, they were able to feel full confidence that the subject had already been thoroughly threshed out. Really, it seemed to him that they as Juniors might have great opportunity of exercising influence on those under them, and of exercising even more influence than perhaps they imagined on those above them. Action and reaction such as he had referred to was conducive to the greatest economy and the highest efficiency; and he wished to bear testimony to the good work done by the excellent staff with which he was surrounded, and without whom he would be absolutely helpless. They were all out with one common object—the good of the Company they served. The system of which he had spoken had worked well, and he commended it to the careful consideration of the members, in the hope that some of them might be able to work on the same lines and achieve the same results as they had done at Lower Sydenham. Mr. Gorman had been good enough to prepare the brochure that had been handed to the visitors, and perhaps he would add to this a few words regarding the works.

HIGHER EFFICIENCY SECURED.

Mr. GORMAN expressed his pleasure at having an opportunity to associate himself with the welcome which Mr. Terrace had just extended to the members, and said the assistants who had acted as their guides had been only too happy to do this for an Association to which they themselves mostly belonged. At the time of the last visit of the Association to the works—in March, 1916—the Company were endeavouring, in common, of course, with other gas companies, to satisfy the demands which war conditions had created. Since then, there had been an opportunity of reconstructing the works; and now they were in a position to satisfy any demands which were likely to come upon them in the near future. The capacity of the Lower Sydenham Works had been increased some 25 p.ct. by this reconstruction. One-third of this increase had been secured by the provision of new retorts, and the remaining two-thirds of the increased output had been obtained by greater efficiency. If they considered the manufacture of coal gas as a huge heat engine, then the ratio of the heat units put-in in the form of coal to the heat units taken out in the form of gas and bye-products, over the past half-year's working, represented an efficiency of approximately 84 p.ct. Those of them who had had experience of construction work would agree with him that the reconstruction of old works always entailed the overcoming of more difficulties, and the solving of greater problems, than did the building of new works. He was, however, glad to say that, in their own case, the reconstruction of these particular works had been carried through without a single accident or hitch of any kind, and this he had no doubt was due to the enthusiasm and the loyalty that permeated the whole of the engineering staff.

Mr. WALLER remarked that, as an Employee Director, he would also like to say a word of welcome. He hoped the visitors had seen something to interest them. Those who took part in the 1916 visit would recall that at that time, owing to the war, extensions were suspended; but since then, as had been noted, great alterations had been made. He could assure them that all those connected with the works had done their best to carry out these alterations and improvements as perfectly as possible. They did claim that theirs was a unique works, because most of the buildings and some of the apparatus were what might be termed home-spun, or, in other words, made on the

works. They were a co-partnership company, and, of course, this reflected a certain amount of credit on the co-partners. He hoped they would see the Association at the works again in the near future.

OBJECTS OF SPECIAL INTEREST.

The PRESIDENT returned thanks for the welcome of the Chairman and Directors and of the different speakers. He felt sure that, during the tour of the works, they had all come across things which had impressed them. For instance, they had seen a water-gas plant which was clinkered only once in twenty-four hours—a fact which had very much opened their eyes—and the time taken up by clinkering was not more than about half-an-hour, which was roughly the time required for the usual clinkering every four or six hours. The engine house was the only one he remembered to have seen which was tiled right up to the ceiling. He had noticed glazed tiles even in the crusher pit under the retort-house; and glazed tiles led to cleanliness. In fact, the cleanliness of the whole works had struck him very much. Then they had seen the "Sydenham" grate; and he had no hesitation in saying that anyone who had once tried this would never again use anything else. One reason for this was the absence of wear and tear. He had furnaces of this kind which had been at work two years, and were the same now as when they went in. On the other hand, with step-grate furnaces the cost of renewals was heavy.

Mr. F. A. FROST proposed a hearty vote of thanks to the Chairman and Directors of the Company for their permission to visit the works and for the generous hospitality extended. He remarked that the increased value of coke to-day, in comparison with former times, rendered it essential that retort settings should be heated with the minimum amount of fuel; and any money spent on regenerative processes was—in spite of the controversy which there was at one time as to the extent to which they should go in this direction—always justified by the increased quantity of coke available for sale. Another question of importance at the present moment was that of refractory material, and it was a fact of great interest that at Lower Sydenham they had so far mastered the problem that they were able to save a large sum of money by making on the works a very efficient and highly refractory material consisting of a mixture of 50 p.ct. new fireclay and 50 p.ct. of old stuff. They had all been very pleased to notice the generous provision made by the Company for the social welfare of the employees. In his vote of thanks, he wished to include Mr. Terrace and his assistants, who had done everything they could to make the visit a success.

Mr. W. T. KENSHOLE seconded the vote, and made reference to the excellent condition and fine layout of the works. The attention given to the comfort of the workmen, in ways both large and small, had much to do with smooth running.

Mr. TERRACE'S acknowledgment of the vote (which had been enthusiastically carried) brought to a close what was in every respect a highly enjoyable visit.

A PRELIMINARY TO CO-OPERATION.

[By F. H. HOLLAND, late of the "B.C.G.A."]

AT the Joint Conference of Junior Associations and Salesmen's Circles a well-known and authoritative leader of thought in the industry said that "they realized more and more as the years went by how important it was for them to co-operate."

Unfortunately he does not appear to have shown how and in what respect co-operation could be applied to the practical management of an undertaking, or, how employer and employee could meet on common ground and obtain equal hearing upon subjects affecting the improvement of efficiency and the giving of public service. This is a pity, because, though nobody doubts the advantages of co-operation in the abstract, yet there is a great and justifiable difference of opinion in the application of it to the practical direction and operation of a business undertaking. It would have been helpful to hear what the director of a great undertaking had in mind in suggesting joint effort upon cooperative lines.

TWO SIDES TO THE QUESTION.

It is true that subsequent speakers talked of education and the all-important qualification necessary to an employee's advancement; but, while there is common ground regarding the necessity for higher staff efficiency, there should be equally common ground for greater opportunity to use higher efficiency. The one is as important as the other. Unfortunately the employee cannot by his own unaided effort alter and modify systems and policy so that he can apply all his effort to the task on which he is engaged. Methods, duties, organization, and policy are the functions of management. It is obvious, therefore, that if the employee is ready to sacrifice his youthful energy and spare time to improving himself (and for the benefit of the undertaking he serves) the undertaking on its part should be willing to examine and satisfy itself that its methods and policy give the staff (the employees) sufficient help in their daily work.

THE EFFECT OF SYSTEM UPON EFFICIENCY.

The highly trained and skilled salesman cannot possibly secure maximum results while he is obliged to conform to a system which requires him to spend some hours each day in recording in a sort of day-book the information which should be found in other documents possessed by his employer. He appreciates as well as his superior that present-day organization prevents this sort of thing; and if he is asked to continue the practice, he will think either that his employer does not know—which is bad—or does not care—which is worse. Again, is he likely to have that necessary belief in his employer's judgment and fairness if he is asked to account for a loss of 4s. 6d. on one estimate, while nothing is said of the four hundred and thirty sales which were carried out at satisfactory prices? These things occur to-day. They happen in large undertakings. They are not common to all, but the examples given here are taken from seven years' experience in examining and reporting upon facts—incontrovertible facts.

THE NEED FOR SIMPLIFIED METHODS.

It is clear that the education of the employee, though good, is not sufficient. Something more is necessary, something which is of paramount importance if the efficient servant of the future is to find employment for his trained faculties. This lies in the adoption of simpler systems, less cumbersome methods, and a more consistent policy for the industry as a whole. If methods are not simplified, and undertakings do not work together in the evolving of simpler practice, then it is difficult to see how an education scheme which is uniform for the whole of the country, and presumably covers education in the industry's commercial practice, can be of real benefit. Secondary education is open to every one in the gas industry, and out of it—no industry need supply what is already there—so that the industry's scheme must be formed for the industry's peculiar needs. As the life blood of the gas industry is the supply of heat, light, and power at such prices as will yield profit, high wages, and low charges to consumers, so obviously any scheme which purports to teach men to secure these essentials must contain detailed presentation of methods and systems which secure these desirable and all important essentials. Further, the systems must be capable of universal adoption; otherwise universal "education" will be impossible.

COMMON INTERESTS.

Standardized methods are by no means impracticable. All gas undertakings are in business for the same purpose. Their object is identical—and yet no two undertakings are alike in their methods. All make gas, all distribute it, all charge those who use it, all receive payment, and all publish balance-sheets which purport to be of the same nature. But of standard practice there is none; and though it may be true that it is impossible to standardize carbonization, yet it is possible, and by no means difficult, to standardize every other phase of an undertaking's work. The pity of it is that, with the exception of one individual and unsupported effort, no attempt has ever been made to introduce in the industry as a whole standard practice and simple methods.

CHANGED CONDITIONS.

Cumbersome methods did not matter so much in the past. The public were supplied with a more or less cheap gas, and a little waste in administration was immaterial—nobody knew of it. There was no incentive, such as competition, to bring home the necessity for efficiency; balance-sheets were no use for comparison, and therefore directors could not detect the unknowable. But to-day things are very different. The public are beginning to ask questions; there is a different school of thought in the offices. The young men read business books, and study comparative methods. They do not accept a statement just because it is made by a higher official. They want the evidence; and when they have it, they form their own judgments. Whether they are right or wrong, whether they are competent to judge or not, the fact remains that there are certain phases of business management in the gas industry which are calculated to make any young man wonder—to say the least of it.

For instance, why should an industry adhere to a form of balance-sheet which lends itself to such different treatment that no two are comparable, nor any one indicative of all the facts? Why should an undertaking persist in using forms and books which are obviously redundant, cumbersome, and involved? Why record a consumption in a book, and then transfer it to a rental ledger, copy it in a "collector's" ledger, and finally leave it to the collector to write out the account? The rental book and account can be typed in one operation and proved page by page as the work progresses. Why employ a man on such work, when it is known that there can be no future for such a man, and that he can never justify a higher salary than the average wage of a stenographer? Why is the outside staff continually upset because a thing is out of stock, when there is a method which automatically indicates the need for repurchasing and scientifically avoids over-buying, over-stocking, and running out of supplies?

THE OUTLOOK OF THE YOUNG MAN.

Educating the staff will not correct these evils. More satisfactory methods must be adopted. It does not need a genius to detect the poor and inefficient ways of doing things. Young men can detect them for themselves; and they are doing so. Throughout the country they are asking why these practices are persisted in; and it is going to be very difficult to show them that they need improvement to fit themselves for promotion in an industry which seems to be content with out-of-date methods. Imagine a young man who is possessed of a gift for figures, when told that the best way to arrive at the total output of an undertaking is to take the receipts as shown in a ledger, take from the total all receipts for rents, residuals, &c., convert the balance into therms, and behold! there are the consumption figures. And yet this is the practice of an undertaking which is by no means small, and which so prides

itself upon its methods that they must not be tampered with on any account. Have they not been good enough for the last fifty years? Of course!

It may be laughable, but it will not be very funny to a man who has to work in such an undertaking, particularly if he has gone through a course of training for a period of some years, and has fostered hopes of filling a good post in a progressive industry. Think of his feelings when he hears an accountant of some public reputation say that works costing is really unnecessary, and that, so long as expenditure is allocated to the statutory heading, things must be alright; or that if his books agree his allocations must be correct—allocations which, if he traces them back, are simply left to the tender mercies of foremen and storekeepers, who have neither time nor knowledge to give them proper consideration!

A Few Questions.

Is it possible to charge "unanticipated" costs on jobs to others which are on the right side? Is it possible to charge excess unproductive time to jobs which have been over-estimated? Are there any such "systems" in the gas industry? Does not the very system of showing in the balance-sheet the value of coal purchased *less* the value of coke and residual sales conceal rather interesting things? Would any accountant like to swear that the industry's balance sheet heading, "maintenance of works and plant," was in fact really maintenance in its true meaning? All these questions are of interest to the rising man. It may be thought that young men do not think; but one need only work among them to know that real interest and cogent judgment are brought to bear upon these and similar matters. For, after all, are these matters not the factors which influence costs? Are they not the "works" of those to whom men look for the rewards of service? Are they not the evidence of management—better evidence than all the platform speeches, better proof than all the promises that were ever made?

One Avenue to Better Things.

So it is towards the betterment of the weapons of business that we should look for higher efficiency. Merely to rely upon some scheme which will improve the efficiency of young men will not reduce the price of gas, will not take from us the responsibility of continuing practice which sooner or later is reflected in public service or gas charges. Would it not be sounder to make some real executive effort to establish once and for all the simplest and most efficient system for operating the many phases of gas undertakings, so that routine would be reduced, and men freed for the exercise of that type of initiative which yields increased enjoyment in business and greater results to an undertaking?

An Ideal.

Efficiency is admittedly an ideal—alike for individual and organization. However many efficient men there may be in an organization, the latter may be inefficient. In other words, an efficient organization is one thing, and an efficient employee is another—the two are not synonymous. Maximum results can only be obtained by combined efficiency. Further, the higher the efficiency of the employee, the greater the need for efficient organization; for as the employee becomes more valuable, by reason of his higher efficiency, so it becomes more important to save his time and his effort—wastage is more costly. This contention holds good for every member of a staff. Each should be freed as much as possible from everything which is not the primary purpose of employment.

The fitter should not have to "allocate." He should be asked to provide only the simplest description of his work to enable a clerk to allocate it. The foreman should be freed from everything touching material or to-morrow's work. Control clerks can do both. The storekeeper should be freed from the necessity of ordering or notifying "shortages." A mean-line system of stockkeeping will look after both much more accurately than any storekeeper. Organization and method should be made to help, and not to hamper. Clerical work in particular should always be looked at with suspicion. It should be a means to an end, and never an end in itself. Costing and managerial methods merit more consideration than space allows. How can there be efficiency without figures which show not only what has been spent, but what has been received and enjoyed through the expenditure? How can management exercise its functions unless it receives facts touching the results of all the undertaking's efforts? How can management adequately reward its staff unless facts—not mere opinions—are known regarding its work? Present-day conditions make many calls upon the executives and administrators of the industry. Would that we could realize how many of these calls could be avoided if we would divide our responsibilities, rid ourselves of things which do not matter, fulfil our individual functions, and, when things have been re-leased to a science of business, co-operate in the greater achievement of the object which alone justifies our existence—the supply of the cheapest gas, the giving of a perfect service to an ever-increasing public. There is still much to be done. Only 52 p.ct. of the field is supplied.

Midland Association of Gas Engineers and Managers.—The autumn general meeting of the Association will be held at 2.30 p.m. on Thursday, the 29th inst., at the Grand Hotel, Birmingham. Details will be announced later.

THE EXAMINATIONS IN GAS-FITTING.

There has been forwarded to us for publication by Mr. Walter T. Dunn, the Secretary of the Institution of Gas Engineers, the following report by Mr. R. J. Rogers, Chief Examiner in Gas Fitting in the City and Guilds of London Institute examinations, in that subject for the year 1923.

Examination II.

	No. of Candidates.	Pass.	Fail.	Percentage of Failures. This Year.	Last Year.
Grade II.	98	67	31	31·6	49

		1st Class.	2nd Class.	Fail.		
Final	39	26	8	5	12·9	45·8

Final Examination.

The number of candidates presenting themselves—namely 39—compares with 48 in 1922, and 83 in 1921. In addition to the practical, written, and *viva voce* examinations in this grade, an examination of candidates' work on the premises of gas consumers was inaugurated this year. On the whole, this new test proved extremely satisfactory. In one or two cases, however, the local examiner was not able to examine two recent examples of the candidate's work, owing to the premises being closed, so that in a future year it might be advisable to ask the employer to furnish at least four addresses where work has been carried out by the candidate, from which the local examiner could make his own selection of the installations to be examined. It is very necessary also that the time sheets relating to the work under inspection should be available to the local examiner. In some centres wrought-iron work in the weekly classes appears to be somewhat neglected in favour of lead work; and in some classrooms the provision of portable forges for heating pipe for bending operations is inadequate for the number of students attending the practical classes.

Grade II.

The number of candidates presenting themselves—namely 98—compares with 79 in 1922; and this increase further justifies the maintenance of Grade II. examinations in gas fitting. The general standard of efficiency in this grade was higher than last year. There is still, however, room for much improvement in the written paper. Many candidates showed weakness in knowledge as to the consumption of gas by different appliances, and in the definition of primary and secondary air, and proportions of mixture. Candidates require further instruction on gas-engines, composition of gas-fire fuel, flame temperature, and in the reading of pressure gauges. More attention should be given in the classes to the theory and practice of gas for power and industrial heating purposes.

General.

On the whole, the examinations this year showed an improvement in the craftsmanship and knowledge of gas-appliances of the candidates in both grades. Considering the large number of gasfitters employed in the British gas industry, the numbers of candidates presenting themselves for examination year by year are discouraging, especially when it is realized to what extent good gas service to the public depends on the ability of the gasfitter. In some gas undertakings encouragement is given to fitters by granting a wage increase to all who pass the Final Examination. The Examiner is of opinion that the Institution of Gas Engineers should urge upon all gas undertakings the need to encourage their fitters to enter for these examinations, to arrange with the local technical school authorities for facilities to be provided for holding weekly classes, and to offer some financial inducement to gasfitters who pass the Final Examination. Any effort or money spent in this direction will, in a short time, be amply repaid by the improvement in the ability of the fitter, and in the better service he will be able to render to the gas consumer.

London and Southern District Junior Gas Association.—On Friday evening, Nov. 23, at the Westminster Technical Institute, Mr. Fredk. W. Dye, of Messrs. John Wright & Co., will lecture on "The Gas Boiler (or Circulator) and Its Application."

The Institution of Engineering Inspection.—This Institution which has been formed in the interests of inspection in every description of manufacturing, construction, and professional engineering, has a very interesting programme of visits and meetings for the 1923-4 session. The President is Mr. Francis R. Wade, O.B.E., M.I.Mech.E., and the Registered Office is: Palace Chambers, Westminster, London, S.W. 1.

A Dulwich Audience Disappointed by Electricity.—There should have been a lecture on "Some British Painters," at Dulwich College, on Friday evening last; but as soon as the pupils and their friends had assembled in the Hall of the College, the main fuse of the electric lighting circuit blew, and all was darkness, and the lecturer's lantern was unusable. Resuscitation of the fickle current being out of the question for that evening, the Master could do nothing but express his regret to the audience, and beg them to return home at once. Such a fiasco was unknown when the Hall was lighted by gas, which was displaced by electricity only this autumn. The College authorities appear early to have found cause to repent the change.

MODERN GAS LIGHTING.

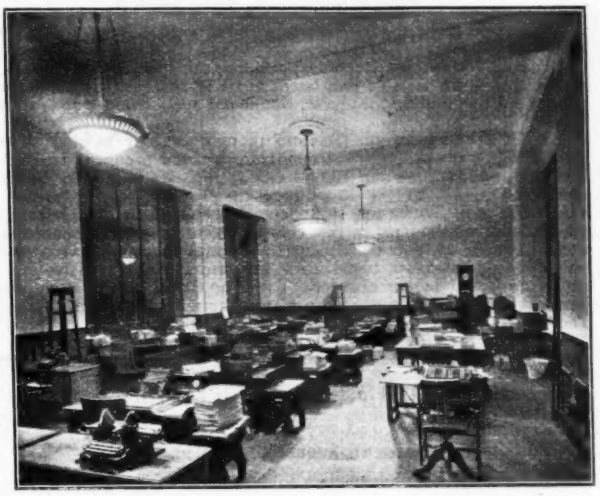
As Demonstrated by the Glasgow Corporation Gas Department (City Chambers Extension).

Much has been heard recently respecting the retention of "Our Lighting Load." It is satisfactory and encouraging to note how this subject has been discussed by the various Gas Associations throughout the country.

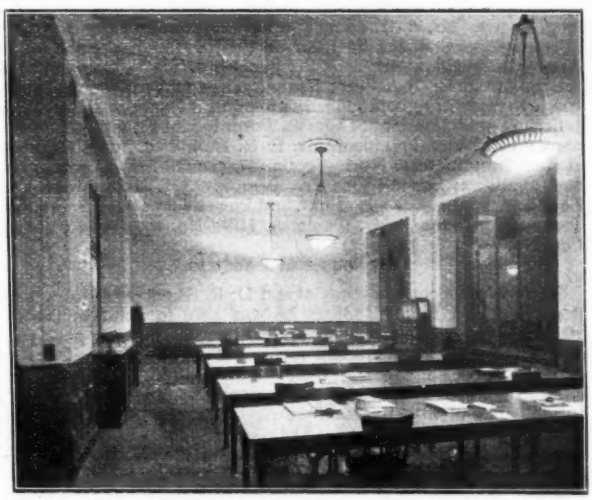
View showing Secretarial and Costing Office Lighted by Means of Superheated Gas-Burners, Controlled from Each End of the Room.

Statements have been made on many occasions that a modern gas-lighting installation is every bit as attractive and convenient as an electric installation; while for quality of light gas is superior to electricity. As ornament and convenience are the two features which have been in dispute, we publish photographs this week which are untouched by the photographer, and are simply the result of a 15-min. exposure to the artificial illumination provided by incandescent gas. The photographs show three rooms in the Glasgow City Chambers Extension occupied by the Glasgow Corporation Gas Department. The fittings, which are made of statue bronze with Vitreosil bowls, are in keeping with the massive style of architecture throughout the building. The lamps are fitted with Sugg's superheated burners and distant-control valves, which enable them to be switched on or off just as conveniently as are electric fittings.

If gas undertakings will fit this type of burner in their offices and showrooms, it will help them considerably in their effort to obtain new, or retain existing, lighting business. The whole of the fittings referred to were supplied by Messrs. Wm. Sugg & Co., Ltd., London.



View showing Machine-Room Lighting by Means of Superheated Gas-Burners, Controlled by a Switch at the Door.



View of Sales Section Room Lighted by Superheated Gas-Burners, Controlled by a Switch at the Door.

MANCHESTER AND DISTRICT JUNIOR GAS ASSOCIATION.

A Meeting of the Association took place last Wednesday in the extensive tar and ammonia works of Messrs. Hardman & Holden, Ltd., Miles Platting, Manchester. Some eighty members assembled at the works canteen, where they were welcomed by Mr. N. Holden (Managing-Director) and Mr. A. Johnson (Works Manager). Parties were formed, and conducted round the works; the guides being Mr. Holden and Mr. Johnson, with Mr. Shepherd and Mr. Taylor, of the chemical staff. The processes seen and fully described were: Working-up of gas tar and all its products, manufacture of vitriol by the chamber process, of sulphate of ammonia, and of carbon bisulphide, manufacture of benzole and the making-up of "National" benzole mixture, together with the automatic filling of petrol tins, &c. It was noticed that the service pipes were each painted a distinctive colour, so as to prevent any error as to which was a benzole pipe and which petrol.

High tea was subsequently served in the works canteen.

Mr. H. E. STONE (Birkenhead) moved a vote of thanks to the firm for their kind welcome and hospitality, and remarked upon the particularly clean and orderly condition of the works, which were very different from what they naturally expected to find in a place of that character, and far cleaner than many gas-works he had seen. Someone had remarked to him on the tour that they seemed to use up everything, and so have scarcely any waste or residue. Close co-operation on the part of gas makers and tar distillers would be to the advantage of the gas industry.

Mr. S. CARTER (Liverpool) seconded, and expressed his pleasure at being able to see the handling of the bye-products appertaining to their own industry. The visit that afternoon could not but be to the advantage of all parties.

Mr. HOLDEN, speaking on behalf of the firm, said he appreciated the vote of thanks. Some people had an idea that tar distillers were as black as the tar they dealt with, but he could assure them this was a fallacy; they were out to give a square deal. The visit gave them all an opportunity of coming in touch with each other; and if a closer union were established, it would be of great benefit to their separate industries. Their present works were established about a hundred years ago, and now the Miles Platting Works were very congested, so that all extensions were being made at Clayton.

Mr. CLAYTON (Managing-Director of the Manchester Oxide Company), during an interval before the evening meeting, gave a few valuable hints on the use of oxide, and mentioned his own researches on the subject, and the difficulties the users of oxide had experienced—*e.g.*, back-pressure, corrosion of pipes, &c. He also dealt with the rotation of boxes. Mr. Clayton hopes to give a paper to the Association at a later date.

THE THERMAL EFFICIENCY FACTOR IN GAS MANUFACTURE.

Mr. EDWARD CROWTHER, M.Eng., Assoc.M.Inst.C.E., then read the paper on this subject which was published on p. 326 of the "JOURNAL" dated Oct. 31.

Discussion.

Mr. J. T. HAYNES (Bolton) congratulated the author, and said the paper possessed high ideals. He, along with the author, hoped it would cause the members to examine their own particular plants more closely, with a view to increased efficiencies. There were certain efficiencies that were practical up to a point, but beyond that it was not prudent to go. The efficiencies of the producer depended on maintaining a maximum percentage of CO, and a minimum CO_2. A low percentage of CO_2, however, meant a high temperature in the producer. Therefore in practice 5 to 7 p.ct. of CO_2 was allowed to go forward in the producer gas. There was considerable room for improvement in present design of gas-works producers. He suggested that it might be better to design an improved producer, rather than aim at

high efficiencies with the present types. Waste-heat boilers were satisfactory, and required but little attention, whereas a process of returning waste gases to the producers would need a large amount of chemical control.

Mr. H. J. HAILSTONE (Rochdale) said flame temperature of gases depended upon the sensible and latent heats of the gas. If the waste gases were put into the producer, would not a low flame temperature result?

Mr. H. D. GREENWOOD (Buxton) thought that by passing waste gases through the producer the temperature of the producer must be lowered, and therefore the CO_2 of the waste gases would not be reduced to CO.

Mr. G. DIXON (Lancaster) said the author had given them a paper which described the ideal, with a view to encouraging them to increase the efficiencies of their own plants. Thermal efficiencies were very well defined, but other items must have equal considerations—*e.g.*, capital costs and labour charges. It was up to the Juniors to get the best all-round results out of the plants committed to their charge. The figures given in the paper on the sensible heat of coke referred to vertical coke, and he asked the author for the figures for horizontal coke.

Mr. J. H. CLEGG (Burnley) said the admission of waste gases to producers was theoretically a good proposition, and it should be possible to overcome constructional difficulties. He was inclined to doubt the author's figures as regards the efficiencies of waste-heat boilers, and was of opinion that there was no thermal gain in steaming verticals.

Messrs. W. BENNETT (Mossley) and H. GOODIER (Runcorn) also joined in the discussion.

Mr. CROWTHER, replying, said that in the paper he only gave the limits to which thermal efficiencies could be improved. They could never obtain 100 p.ct. So far, little attempt had been made to approach the limits mentioned in his paper. The gas engineer should apply theoretical considerations to practice, and not remain content with present conditions. He was not able to give the figures for horizontal coke.

Mr. DIXON moved, and Mr. HAYNES seconded, a vote of thanks to the author for his paper, and also congratulated him upon his recent appointment to Stoke-on-Trent.

CANADIAN GAS ASSOCIATION.

Sixteenth Annual Convention.

Ottawa was the place chosen this year, and the end of August the time, for what proved to be one of the most successful annual conventions held by the Association. The proceedings opened in happy vein, with the welcome of the Mayor, who spoke of the good feeling that had always subsisted between the city and the Ottawa Gas Company, which, he said, in large measure was due to the splendid men who were at the head of the organization—such men as Mr. A. A. Dion and Colonel Street. He expressed strong approval of the decision of the Company to place bonds among their consumers, as being likely to bring the Company and the public closer together. Early on, the officers for the forthcoming year were announced, including: President, Mr. C. A. Jefferis, Superintendent of Works, Toronto Consumers' Gas Company; First Vice-President, Mr. E. R. Hamilton, Superintendent of Gas Manufacture, Nova Scotia Tramways and Power Company, Halifax; Second Vice-President, Mr. J. J. Humphreys, Gas Engineer, Montreal Light, Heat, and Power Company; Secretary-Treasurer (pro tem.), Mr. Ernest A. Hills, No. 19, Toronto Street, Toronto.

The President's Address.

Of this year's convention, Colonel D. R. Street, of Ottawa, was President; and in his address he was able to point to the remarkable reliability of the gas industry. During the past year Canadian gas utilities suffered severely from the effects of strikes of miners and railway employees in the United States, with resultant high coal costs and great difficulty in obtaining supplies; but in spite of all adverse factors, not for one hour was any Canadian municipality deprived of a gas supply. For this happy outcome of a period of intense anxiety to the Canadian gas industry, acknowledgment was made of indebtedness in no small measure to the fair-minded authorities in the United States who had charge of coal allotments and transport problems, and to the officials of the American Gas Association, who accomplished splendid work in securing supplies of coal for Canadian gas utilities, even when gas-plants in Michigan and elsewhere were forced to discontinue operations.

The increasing costs of both bituminous and anthracite coal have caused searching inquiry to be made by the brightest minds in the industry as to possible means of obtaining higher efficiencies from raw materials, with the result that several very interesting new types of gas-generating plants have been developed, and modifications of existing types have greatly improved operating figures. Still further improvements are looked for, as the President believes there is yet much to be accomplished before ultimate efficiency in gas manufacture is reached. Two of the outstanding developments during the year have been the increased gas yield from continuous vertical retorts by means of heavy steaming—the steam being raised by waste-heat boilers, at no extra expense for fuel—and the introduction of a novel system of operating water-gas sets, whereby considerable savings in generator fuel, oil, and steam were made possible.

Gas for Baking.

In the first paper on the programme, Mr. C. D. Slimpin, of Montreal, gave illustrations and descriptions of a number of gas-fired baking ovens. Two pictures were of reel or revolving ovens installed in convents in that city, where gas is used for all cooking and water-heating purposes. In addition to making bread for their own needs, they also supply other institutions; and the arrangement proves satisfactory as to both quality of bread and cost. A two-deck or compartment oven in the bakery of the largest lunch company in Montreal is in use twenty-four hours every day of the week; and through this one installation the Gas Company have a consumption which averages between 250,000 and 300,000 c.ft. per month. About three years ago the first large Baker-Perkins oven, direct heated by gas, for bread baking was installed. The firm now report that there are more than a hundred travelling-plate bread ovens heated by gas (artificial, natural, or producer) in operation or under construction in the United States and Canada. What is claimed to be the largest oven in the world is in the Dent Harrison Bakery at Montreal. It is gas heated; and bread is turned out at the rate of 5000 loaves per hour. A duplicate of this oven has been ordered for the same bakery.

The author found it difficult to give exact figures as to gas consumption per pound of material baked, as the cost varies, not only with quantity, but with the product itself. However, he quoted the results of some tests made. One of these showed a consumption of 33,685 c.ft. of gas; the bread baked being 21,615 lbs. In another test, under different conditions, with a gas consumption of 41,400 c.ft., 48,996 lbs. of bread were baked. Then 63,900 c.ft. of gas was used for baking 37,897 lbs. of bread. A large portion of this gas was required for heating-up the ovens, which were used for cake baking after the bread. In another case a period of three days showed a gas consumption of 83,600 c.ft., for 37,338 (presumably 1½ lb.) loaves of bread. On several tests made in Montreal, it has been found that the maximum efficiency is secured with an average consumption of about 50 c.ft. per burner; and, roughly figuring, on long-hour baking, 1 c.ft. of gas per pound of bread baked would, according to Mr. Slimpin, be a fair average to reckon on. In labour and general charges for maintenance, and running expenses, gas is ahead of other methods. The flexibility of the gas-oven, too, makes possible the baking, not only of bread, but also of all varieties of rolls, buns, pastries, &c.

Protective Coatings for Steel.

From the point of view of the paint manufacturer, the question of protective coatings for steel, and the method of application, was dealt with by Mr. J. Grieve, of Montreal. After describing the principal kinds of paint manufactured for steel protection, he went on to say that the maker of the paint, if he is to ensure success in application, must know the exposure to which the paint will be subjected, any possible restrictions relative to methods of application, and (if possible) the nature of the existing surface. The paint must be so applied as to form the film intended. If a manufacturer specifies a spreading capacity of 750 sq. ft. per imperial gallon, and the paint is applied with a covering capacity of only 400 sq. ft. per gallon, not only is paint being wasted, but the probability is that trouble is being courted. The same is true if paint is over-extended. Again, one thick coat is not equal in service value to two thin coats of similar total thickness, because the nature of a paint film is such that, unless the film is spread to the proper extent, unequal setting occurs.

His firm, as manufacturers of special protective coatings for particular purposes, make a practice of indicating the covering capacities of their paints in specification book form. These capacities have been arrived at after careful practical tests and long experience on actual work. As to covering capacity, Mr. Grieve said: The finest mesh through which paint pigments are gauged is 350 meshes to the lineal inch. At this gauge, of course, a large proportion of fine particles of smaller size go through the meshes; but the 350 mesh is the limit of cross section of the largest particles. A paint spreading to 800 sq. ft. per imperial gallon is approximately 1-400th of an inch in thickness. It would be seen at a glance that the large particles are slightly thicker than the film, and consequently that the densest film is one not extended over 800 sq. ft. per gallon. If a paint is spread further than this, it has not enough body to give service value. One meets paints for which covering capacities are claimed up to 1000 and 1200 sq. ft. per imperial gallon. These claims are usually selling claims, which do not work out in practice. In any case, in view of the thickness of the film, paints should never be spread to this extent if protection of steel is the object in mind.

Standard Capacities for Gas-Meters.

The variation in capacities of gas-meters manufactured by different firms, and all having the same designation as to lights, has led to inconvenience which the Montreal Light, Heat, and Power Company have sought to minimize by standardizing the size of meters used in their service. Mr. E. J. Turley, in a lengthy paper described what has been done in this connection. First the different types of meters were tested, and rated in cubic feet of air at both ½ in. and 1 in. drop in pressure. The former designation of light was neglected, and badges were placed on the meters stating their capacity. Then tables were prepared setting out the various appliances in use, the consumptions per hour, and the size of

meter—designated "A," "B," "C," &c.—required. The standard capacities selected by the Company are:

Designation.	Capacity, C.Ft. of Air per Hour, ½ in. Drop in Pressure.
B–1	90
E	180
G	450
H	720
K–25	1500
K–50	3000

For capacities over 3000, the Company use K–25 and K–50 meters arranged in batteries to suit the requirements.

While it is not maintained that the capacities chosen are the most satisfactory standards which could be employed, they are the most satisfactory for the meters which the Company have in their service. The Company believe that a movement should be started among manufacturers and users in Canada to standardize gas-meters, including cases, valves, passages, diaphragms, &c.

Consumers' Accounts.

A long communication on "The Application of Typical Systems of Consumers' Accounting to the Needs of Smaller Companies" was presented by Mr. Edward J. Tucker, of the Toronto Consumers' Gas Company. It appears that, according to the Accounting Section of the American Gas Association, of a total number of 123 smaller companies reporting to the Association, 16 use bound ledgers, 86 loose-leaf ledgers, and 21 card ledgers. Continuous meter reading and billing has been adopted by 35 companies. It is the policy of 27 of the companies to collect when delivering the bill. He outlined the card ledger system of consumers' accounting which has been used by the Toronto Company for the past twelve years, and gave a description of the office routine involved in the taking of applications for laying of service pipes, installation of meters, and the collection of accounts. At the same time, there was no desire on his part to advocate the adoption by smaller companies of the system detailed, as he realized that what would constitute an efficient and economical method for a large city would not in its entirety prove effective in a smaller place. In Toronto, one-third of the 135,000 consumers each year move from one residence to another.

Those responsible for the development of the system described have, he said, always recognized the value of office labour-saving devices, and they are employed on all operations where their use is considered advantageous. No clerk should do that which a machine can do as well or better. By turning over the drudgery of mechanical work to the care of speedy, accurate machines, all wasteful head and hand labour is eliminated, and the resulting work is made more uniform.

Locating Leakages of Gas.

In a paper on "Locating Gas Leaks in Paved Streets," Mr. A. G. Cushing, of Montreal, said that, if the evidence procured through a thorough inspection points to any particular spot, bar holes should be made over the main or service there, and these holes tested for gas. If the foreman is still in doubt as to where he should start excavating, he should get any available information as to openings which have been made in the past in that vicinity by telephone from the office. This source of information is more useful in Canada in the winter time, when, owing to the presence of snow, evidences of recent excavations do not show up. In this connection, in Montreal, there are employed two men known as "Cut Inspectors," who do nothing except travel round the streets checking excavations. The locations of openings by which the Company's mains or services are in any way endangered are carefully recorded, and this information has often proved very useful in locating damaged mains or services.

Once the probable location of the leak has been decided upon, it only remains to dig to the main or service, and see if this is correct. Very often the first opening does not uncover the actual spot; but the direction from which the gas is coming can be determined, and a second opening made a few feet away. It may be necessary to have a number of openings—the distance apart to be left to the judgment of the foreman. In this connection, said Mr. Cushing, it should be emphasized that in no branch of gas distribution work is it so advisable to retain old employees. A foreman or fitter who has been working in a district for many years, and who knows its peculiarities, is invaluable when it comes to the location of leaks.

For excavating in surfaced streets, the Montreal Company have for the past year been using a powerful pneumatic drill operated by a small air compressor mounted on a one-ton Ford truck. This has proved very satisfactory, not only because the danger of sparks is reduced to a minimum, but because a great deal of time is saved. Under summer conditions, where formerly two labourers would take five hours to break through the pavement and dig down to the main, two men with the pneumatic drill can now finish in one hour. During the winter, with frost down below the main, it formerly took two men from twelve to twenty-four hours to uncover a main. The same work can now be done in from two to four hours. The saving in cost is not as great in proportion as the saving in time, owing to the higher wages paid; but the minimizing of danger and damage charges due to the saving in time is very considerable.

Vertical Retort Results in Victoria, B.C.

Mr. F. H. Hewlings, Superintendent of the Gas-Works at Victoria (B.C.), explained the reasons for the introduction of a small Glover-West vertical-retort plant there. When the Government put into force a new standard in November, 1919, requiring only 450 B.Th.U. instead of 520 B.Th.U., it was decided to abandon a proposal to instal a new horizontal plant, and to go in for verticals. The results of twelve months' working of the Glover-West plant do not by any means represent the best that could be obtained from it, consequent upon restricted local conditions; but already the Company have been enabled with confidence to put into force a new schedule of rates for gas—especially offering gas at low rates for heating, in competition with wood and coal.

Comparative figures of the working of the previous horizontal plant and the new Glover-West vertical installation, are reproduced in the next article.

Arc-Welded Gasholders.

Another very useful contribution to the proceedings of the Association was made by Mr. Joseph N. Reeson, Engineer-in-Chief to the Metropolitan Gas Company of Melbourne (Australia), in the form of a paper on "Arc-Welded Gasholders." In this communication (which was reproduced on p. 260 of the "JOURNAL" for Oct. 24), Mr. Reeson described holders which have been made in Melbourne with welded joints, as against riveted ones. He thought he might safely say that, so far as gasholders are concerned, those erected in Melbourne are the first structures so made not only in Australia, but also in the world. In his opinion, the advantages of the new method of construction are so great that in a few years' time no new structure of any kind will be riveted.

There was also a paper by Mr. E. R. Hamilton, Superintendent of the Gas Department of the Nova Scotia Tramways and Power Company, Ltd., Halifax, on "Prize Contests as a Means of Stimulating New Business," and another by Mr. W. B. Johnson, of Toronto, on "The Sale of Domestic Appliances in the Smaller Cities."

Reports were presented by Messrs. J. J. Armstrong (Toronto), J. J. Humphreys (Montreal), F. A. Jansen (Ottawa), and W. B. Johnson (Toronto), as representatives on Committees affiliated with the American Gas Association.

VERTICALS AT VICTORIA, B.C.

Among the papers presented at the recent convention of the Canadian Gas Association was one by Mr. F. H. Hewlings, who gave some comparative working results of the old horizontal settings and of a new installation of Glover-West vertical retorts at Victoria, B.C. We reproduce the portion of his paper which deals more particularly with this question.

The results shown by twelve months' operations of the vertical-retort plant do not by any means represent the best that could be obtained from the plant, as at least 100,000,000 c.ft. of gas per annum could be made from the eight retorts under fire. At present, due to prevailing conditions of insufficient holder capacity, and limited output, it is necessary repeatedly to put one or more retorts in or out of action, which, to say the least, is not conducive to good results or economy in coke consumption. However, with an increasing output and further experience in operating, it is hoped in the near future to be able to report a considerably larger yield of gas per ton of coal, together with a gas nearer the new standard of 450 B.Th.U. than 488 B.Th.U., and containing a minimum of inerts.

The results already obtained have enabled the Company confidently to put in force a new schedule of rates, especially offering gas at low rates for heating in competition with wood and coal. Heating, after all, is our future field of operation, and it behoves all of us engaged in the gas industry to put our houses in order and then go forth and battle unceasingly to rout raw coal (with its attendant soot) entirely from the heating field.

The gross B.Th.U. figures show that there is still a possibility of increasing the yield of gas another 2000 c.ft. per ton of coal by extra water gas from steaming, bringing the yield up to 19,456 c.ft., thus reducing the quality to 467 B.Th.U. per c.ft.—a sufficient margin of safety above Government standard.

REPAIRS AND RENEWALS.

Repairs and renewals of superheater, elevator ropes, step grates, and furnace tools, &c.—$467—is less than one-half the amount spent on the horizontal plant.

ELECTRIC POWER.

Electric power used for unloading coal from scow, driving coal belt, G.B. coal conveyor to overhead retort-house bunkers, and coke extractors—total, 6312 K.W.H. used at 2 cents per KW.H.—$126.24.

OPERATION RESULTS.

A comparison of carbonizing results from the old horizontal retort plant and Glover-West continuous vertical-retort plant, using Ladysmith and Comox (Vancouver Island) washed pea and

washed slack in about equal proportions in both plants, is given herewith:

Old Horizontal Plant.

July 1, 1920, to June 30, 1921.

Sixty stop-end retorts 16 in. by 22 in. by 9 ft.—eight half-depth producers; all settings operated at very high heats with dry hydraulic main, maximum pull on exhausters, and retort-house governor control.

Total gas made, corrected, c.ft.	92,956,500
Tons of coal carbonized	7,987
Gas made per ton of coal, c.ft.	11,638
Average B.Th.U. per c.ft., Government returns	453
Total B.Th.U. per ton of coal	5,272,014
Lump coke made for sale, lbs. per ton of coal	927
Estimated tar yield, gallons per ton of coal	8 to 9
NH_3 in gas made, lbs. per ton of coal	5

Retort-house labour—11 to 14 men paid on an average 70c. per hour.

		Cents per 1000 C.Ft.
Coals, 7987 tons at $6.55 in bunkers	$52,378.00—	56.3
Retort-house labour at 70c.	26,522.00—	28.55
	$78,900.00	84.89
Less residuals—		
3702 tons of coke at $6.33, 927 lbs. per ton of coal used	$23,462.00—	25,24
Tar, 75,468 gallons. 9.4 gallons per ton of coal	9,535.00—	10.25
	$32,997.00	35.49
		84.89
		35.49
Net cost in holder *less* residuals		49.40

New Glover-West Vertical Plant.

July 1, 1922, to June 30, 1923.

Eight vertical retorts and two producers used. Settings operated at high heats and steamed continuously with superheated steam (650° Fahr.) at an average pressure of 18 lbs. per sq. in., using ¼ in. nozzles and steam obtained from an 18 H.P. vertical tubular boiler fired with producer gas taken from one producer; safety valve set to blow off at 50 lbs.

Dry collecting main with even gauge on retorts.

Water used in producers only.

Total gas made, c.ft. corrected	97,565,500
Tons of coal carbonized	5,589
Gas made per ton of coal, c.ft. corrected	17,456
Average B.Th.U. per c.ft., Government returns	488
Total B.Th.U. per ton of coal	8,518,528
Lump coke made for sale, lbs. per ton of coal	700
Estimated tar yield, gallons per ton of coal	10 to 11
NH_3 in gas made, lbs. per ton of coal	6

Retort house labour—three stokers and three helpers, average pay 55c. per hour.

		Cents per 1000 C.Ft.
Coals, 5589 tons at $6.03 in bunkers	$33,706.00—	34.55
Stokers' wages at 55c. per hour	9,718.00—	9.95
	$43,424.00	44.50
Less residuals—		
1956 tons of coke at $7.97; 700 lbs. to ton of coals	$13,885.00—	14.23
Tar, 53,500 gallons; 9 2 gallons per ton of coal.	6,996.00—	7.17
	$20,881.00	21.40
Net cost in holder *less* residuals		23.10
Old plant		49.40
Vertical plant		23.10
In favour of verticals		26.30

Returns for the Month of July, 1923.

Ladysmith and Comox coal—40 p.ct. and 60 p.ct.		
Gas made, corrected, c.ft.		8,381,000
Coal carbonized, weighed	437 gross tons =	978,836 lbs.
Gas made per ton of coal, corrected, c.ft.		19,174
Average B.Th.U. per c.ft., Government returns		479·3
Total B.Th.U. per gross ton of coal		9,184,286
Lump coke for sale per gross ton of coal, lbs		816
Coal, 437 tons at $6.03	$2,635.10	
Stokers' wages, 6 men at 55 cents per hour	818.40	
	$3,453.50	
Coke, 816 lbs. at $7.97; 175 tons	$1,394.70	
Tar, 92 to ton; 4,020 gallons at 13 cents.	522.60	
	1,917 30	
Cost of gas made, 8,381,000 c.ft. into	$1,536.20 =	18 3 c.

Coke.—The proportions of coals have been changed from 50-50 (used in report) to Ladysmith 40 p.ct. and Comox 60 p.ct., making a much cleaner coke with less breeze.

	Lbs.
Coke for sale per ton of coal	816
Coke gasified in retorts	140
Coke for boiler	70
Coke to producer	318
	1,344

Coke per 100 lbs. of coal, 14·2 lbs.
Increased yield of gas per ton above old horizontals, 7536 c.ft,, costing 90 c.
Increased B.Th.U. per ton above old horizontals, 3,912,272.

COMPARISON OF COKE USED BY BOTH PLANTS.

In both plants only forked lump coke was used for producer work. The actual weight of lump coke produced per ton of the coal used was 1344 lbs. These data were obtained by numerous weighings of the lump coke produced per ton of coal from the old horizontal plant after quenching with a minimum quantity of water.

Horizontal Plant.

	Lbs.
Coke made for sale per ton of coal	927
Coke used in producer, &c.	417
Total	1344
Coke used for 100 lbs. of coal carbonized	18·6

Vertical Plant.

	Lbs.
Coke made for sale per ton of coal	700
Coke probably gasified by steaming	140
Extra weighed coke used in one producer to produce gas for steaming boiler	70
Coke used in producers for gas manufacture	434
Total	1344
Coke used per 100 lbs. of coal carbonized	19·3

Coke as sold from the horizontal plant probably contained 10 p.ct. of added moisture from quenching. Coke from the vertical plant was sold, as produced, dry; no water for quenching being required.

In comparing the remarkable increase of gas and B.Th.U. obtained from the vertical plant with the results obtained from the horizontal plant, if we take it as being principally, if not entirely, due to the steaming process introduced into the vertical system, the following statement will show that this extra 5818 c.ft. of gas per ton of coal has been produced at very little expense for materials used.

Coke probably gasified in retorts, lbs.	140—	$0.60
Coke used steaming boiler, lbs.	70—	0.30
Total (value in Victoria), lbs.	210—	$0.90

If the boiler were steamed by using waste-heat chimney gases, it would represent a further saving of 30 cents per ton of coal carbonized.

BOILER.

Maximum pressure of steam set to 50 lbs.—steam superheated to 660° Fahr. by chimney gases—steam pressure then reduced to 20 lbs. before entering steam nozzles. Boiler evaporating 350 lbs. of water per hour; steam being used entirely for steaming retorts. Water measured by meter.

The eight retorts under fire were carbonizing coal for 79·8 p.ct. of the year, and made, when in use, 41.899 c.ft. per day per retort. Average for the eight retorts under fire, 33,412 c.ft. per day per retort.

Increased Consumption Per Head.

An optimistic view of the future of the gas industry is taken by Mr. F. A. Newton, of Jackson (Mich.), as is evidenced by a paper he read at the last Michigan Gas Association convention. Dealing with the comparative development of gas and electricity in a "certain city," in that State, he stated that in this particular city there were about 9000 gas consumers and slightly over 4000 electricity consumers in 1915. At the close of 1920 the number of gas consumers had increased to about 11,500, which kept pace with the growth of the population. During the same time, the electricity undertaking secured nearly 4500 more consumers. Certain representative sections of the city were selected, ranging from the largest and most expensive houses to the smallest and cheapest dwellings, and a comparison was made between the gas and electricity business in these districts in 1915 and 1920. In the former year, a large number of the houses were using gas only; whereas by 1920 there were few left which were doing this exclusively, and the number of houses using both services had increased remarkably. In other words, the increase in the number of electricity consumers in these districts came chiefly from those people who had given up the exclusive use of gas by taking on electricity for illumination. A significant fact was that during the same period the average use of gas per consumer increased very materially. The number of gas consumers in these districts had not increased, because the houses were all using gas in 1915 and had merely continued to do so. This, he pointed out, was the explanation why the electricity utility had added more consumers generally in recent years than the gas utility. He had noticed that, when an electricity undertaking came into a territory which had previously been served by a gas company alone, the gas sales per consumer did not fall off, but actually increased.

Yorkshire Junior Gas Association.—There is to be a meeting of the Association in the Library of the "Y.M.C.A.," Albion Place, Leeds, next Saturday (Nov. 17), at 3.15, when two papers will be submitted for discussion—one by Mr. C. H. Chester, F.C.S., of Southbank, on "The Classification and Testing of Coals," and the other by Mr. S. T. S. Musgrove, of Sheffield, on "Maintenance."

CORRESPONDENCE.

[*We are not responsible for opinions expressed by Correspondents.*]

"Japan's Purgatory" and Drawing Materials.

SIR,—Our attention has been directed by many of our good friends in the gas industry to the reference in the issue of the "GAS JOURNAL" for Oct. 31 to an article appearing in the current issue of "The Arc Journal" under the heading "Japan's Purgatory—and the Future."

The first communication reached us from the Dorking Gas Company, of which the following is a copy, together with our reply:

The Dorking Gas Company, Dorking, Nov. 1, 1923.

Messrs. J. Halden & Co., Ltd.,
London, S.W. 1.

Dear Sirs,

We thank you for your quotation of the 31st ulto. duly to hand, and, at the same time, we see from a current issue of the "GAS JOURNAL" that your firm have been advocating the abolition of the use of gas.

Should this report be correct, it will be reasonable to suppose that you would not wish to do business with gas companies; and we would therefore transfer the little business we have in your class of goods to some other firm more kindly disposed towards us.—Yours truly,

MANAGING DIRECTOR.

"The Arc Journal,"
8, Albert Square, Manchester, Nov. 5, 1923.

Messrs. The Dorking Gas Company,
Dorking.

DEAR SIRS,—Your letter dated the 1st inst., addressed to our London House, has been referred to the Editor of our "Arc Journal."

While the Editor has not had the pleasure of seeing the reference in the "GAS JOURNAL" to our article in the current issue of "The Arc," under the heading "Japan's Purgatory," we thank you for the opportunity afforded to point out that contributions to our Journal do not necessarily embody the opinions or policies of this Company.

The Journal is intended as a review of current topics of interest to the engineering trade in general; and our pages are open to all contributors.

In these circumstances, it is essential for our Journal to assume a character of absolute independence; and, while the current issue may contain references to an industry in which many of our good friends are interested, it is not without possibility that future issues may contain references of a diametrically opposite character.

We are assured that not only yourselves, but all sections interested in the gas industry, will readily recognize the impartial position that we must take up in attempting to publish a journal of this character; and, at the same time, we are sure it is unnecessary for us to state that the future development of the gas industry does not primarily depend on any form of journalism, but in competition with its contemporaries. Efficiency and public utility will always remain the governing factors, as heretofore.

In conclusion, we can only say that we naturally regret very much that the article in question should have occasioned the slightest offence to any of our readers.

Yours faithfully,
THE EDITOR,
"The Arc Journal."

In the first place, we are complimented that your well-known publication should attach such great importance to any article appearing in our Bulletin, of which the issue in question is only the second number. Secondly, we desire to remove any impression that articles or commentary of any kind reflect the opinions or policies of this Company. The pages of our Bulletin are open to all; our object being to present to our clients a magazine of general interest. Thirdly, we should be very pleased to offer the pages of our Bulletin as a medium for a statement of the case for gas, even if it take the form of a direct contradiction of Mr. Robinson's paragraph, by one of your staff or other prominent member of the gas profession.

Our position is at all times one of strict neutrality, and our object to provide interesting matter for our clients. Not only are we consumers of gas ourselves, but gas equipment is fitted to certain machines which we manufacture. In conclusion, we trust we shall not trespass too greatly on your valuable space in asking that our letter may be given the same publicity as the article giving rise to this correspondence.

8, Albert Square, Manchester, Nov. 9, 1923.

Per pro J. HALDEN & CO., LTD.,
J. B. HALDEN,
Vice-Chairman.

[Reference to this communication is made on p. 440.—ED. "G.J."

The Halifax Two-Part Gas Tariff.

SIR,—We appreciate your criticism of the new Halifax scale of gas charges, which, you will remember, is optional. The present scheme of selling gas in parcels is still in operation.

Your first point is that the system is "not generally applicable, inasmuch as it could not be applied to companies having a standard or basic price and a standard or basic dividend." I dealt with this contingency in my paper on "Facilities for the Use of Town Gas" at Oldham on March 22 last, when I emphasized the following words:

> "Difficulties may arise in the case of gas companies as to basic price in relation to dividend. Fresh legislation may be necessary in order to have the net price received per therm accepted as the basic price."

In designing the scheme it was decided to hold out to the small consumer the advantages enjoyed by small consumers in every town, in relation to the amount of gas consumed.

The feature of the scheme is that the small consumer pays only a small fixed charge, and that the fixed charge increases in accordance with the size of the premises. The same principle is applied to industrial business. The fixed charge of £2 per annum per horse-power (or the equivalent of horse-power) is based upon the number of cubic feet in the maximum hourly demand. You will agree that the cost of providing a service pipe and meter, and providing a supply of gas equal to the maximum demand, for however short a period, varies according to the size of the premises. The maximum demand is therefore a fair basis on which to levy the proportion of fixed charges.

As already pointed out, the combined cost of distribution and fixed charges in Halifax amounts to 50s. per consumer per annum. Obviously, the small consumer would suffer if that amount were levied equally on every consumer. I dealt with this point in my address to the Yorkshire Junior Gas Association (see "JOURNAL" for Nov. 7, page 386) as follows:

> "Fixing the Price of Gas— . . . the large consumer must shoulder a bit more than his proper share, in order to enable the undertaking to carry a large number of small consumers."

Your main criticism is, I think, that the consumer whose standard requirement is only 9000 c.ft. per annum, and who uses 49,700 c.ft., pays a total of only 138s. 5d. per annum, and that the consumer whose standard requirement is 12,000 c.ft., and who only uses 43,000 c ft. per annum, pays 138s. under the scheme. These examples you have extracted from the circular which has been prepared, delivered, and explained to the consumers for the purpose of emphasizing the advantage of the scheme to the small *householder*—not necessarily the small *consumer*.

In the example quoted the consumer living in the larger house uses less gas than his neighbour in the smaller one. Your criticism would be met if we made the fixed charge equal in these two cases. The only difference remaining between the two is that the small householder burned 49,700 c.ft. and the larger householder 43,000 c.ft. Both paid the same amount per 1000 c.ft. for their gas.

The graphs we have prepared from time to time show that it is a fallacy to levy a uniform charge for all purposes on every 1000 c.ft. of gas consumed. We believe—and our belief is based upon experience—that every consumer is willing to pay his fair proportion of the fixed charges and have his gas at an attractive price. I have already shown that the occupants of houses rated as low as £13 per annum are burning over 100,000 c.ft. of gas per annum. These consumers, if they were charged the ordinary rate for every 1000 c.ft. of gas consumed, would pay more than their fair proportion of the fixed charges. Under the new scheme they will pay a fixed charge of 1s. per week—the price of half a bag of coal—and will have all the gas supply at 2s. per 1000 c.ft.

I hope I have covered all the points raised in your criticism. Many other questions arise; but, as they have not been referred to, I shall not trespass further on your space at present.

W. B. M'LUSKY,
Halifax, Nov. 10, 1923. Gas Engineer and Manager.

[In our comment last week, we said: "We want to know why the man who consumes 56,200 c.ft. should, under the alternative system, pay more per 1000 c.ft. than the man who consumes 49,700 c.ft. Working out the figures, the latter pays an average of 2s. 7d. per 1000 c.ft.; the former 3s. 2d., or 7d. per 1000 c.ft. more. Perhaps Mr. M'Lusky will show us the justification for this." It will be noticed that Mr. M'Lusky does not specifically deal with the difference of 7d. per 1000 c.ft., which becomes a large sum when multiplied by 56.—Ed. G J.]

Institution of Gas Engineers and the British Refractories Research Association.

SIR,—We enclose herewith copy of a letter which we have to-day forwarded to the Secretary of the Institution of Gas Engineers, replying to Mr. A. E. Broadberry's remarks in connection with the British Refractories Research Association at the last annual meeting of the Gas Institution.

We shall be glad if you will insert the letter in your next issue.

C. W. THOMAS, Chairman.
J. W. MELLOR, Director.

British Refractories Research Association.
Office of Director of Research,
Central School of Science and Technology,
Stoke-on-Trent, Staffs., Nov. 5, 1923.

[ENCLOSURE.]

The Secretary,
Institution of Gas Engineers.

SIR,—We are instructed by the Council of the Refractories Research Association to reply to the introductory remarks of Mr. Broadberry, when presenting his report to your members at the last annual meeting, held in Belfast. Our Council feel that Mr. Broadberry's remarks, as reported, are calculated to convey an entirely erroneous impression. Indeed, the editorial notes of some journals other than those specially identified with the gas industry indicate that such is the case.

At the Institution's annual meeting held in London last year, there appears, in the introduction to the report of the Refractory Materials Section, the following:

> Meanwhile, further valuable work has been carried out, the results of which will be found in the following papers (now being presented).

Apparently, therefore, Mr. Broadberry's strictures apply more particularly to the period subsequent to this time. As a matter of fact, it was not until January of this year that Mr. Broadberry stated the programme of research desired on behalf of the Gas Engineers Institution—viz.:

(*a*) Test under load of various materials, emphasizing the relation between the ordinary refractory test and the load test.
(*b*) Tests on "sillimanite" materials, including the manufacture of gas-retorts and testing them in practical use.
(*c*) Tests on carbonized clays.
(*d*) Chemical analysis and the preparation of clays by purification, and adding ingredients to enhance their fire-resisting qualities.

Mr. Broadberry scarcely could expect the research work involved under these four headings to be completed, and the reports written and edited, submitted to the Council of the Association for approval, printed, and published in from three to four months. Some of the work, however, had been started by the Research Association before the Gas Engineers Institution expressed their desire to have it form part of their special programme; but it was not possible to have it completed and ready in time for their Belfast meeting.

The manuscript of a report, on the research indicated under item (*b*), was in the hands of the Director at the time the meeting was held in Belfast; and since that time the manuscript of Part I. of the report under item (*a*) has been completed. The work under (*d*) has entailed an expenditure in time and expenses of nearly £1000—that is, more than the five years' subscription, of £150 per annum, of the Gas Engineers Institution. Incidentally, the report on "Jointing Materials for Silica Refractories," presented at the Belfast meeting, and to which Mr. Broadberry referred somewhat contemptuously, has cost over £150 in wages and expenses. The report was left in its incomplete state owing to the two workers obtaining employment elsewhere.

It will be noted that Mr. Broadberry complains that this particular piece of work "is just as applicable to the metallurgical industry as to the gas industry, as it deals only with jointing materials for silica refractories." As to the first statement, we can only say that the Gas Institution specifically asked for this particular work to be undertaken; while in regard to the latter complaint, we would point out that this paper is the third of a series, of which the first two, dealing with jointing materials for fireclay refractories, had been handed over to the Institution some time previously.

Obviously the research under item (*b*), sillimanite, could not be expected to be completed in four months or fourteen. But the sillimanite has been obtained from India, the retorts are being made, and arrangements to build the retorts into settings at Birmingham have been completed. We hope, indeed, that the working of these retorts will be so satisfactory as to delay the completion of the report for a long time, if it is to be of real service to the gas industry.

Again, the Refractories Association have not "annexed the previous work" of the Refractory Materials Section of the Gas Engineers Institution. They merely took over and continued work which was incomplete, at the express desire of the Department of Scientific and Industrial Research.

We trust we have shown that the interests of the Gas Institution, who contribute one-sixteenth of the total subscriptions from members of the Association, have not been neglected, but that, on the contrary, they have received in service far more than their subscription represents. Our Council do not regret the expenditure, but they do feel that the remarks made by Mr. Broadberry were misleading and unjustified.

(Signed) C. W. THOMAS, Chairman.
J. W. MELLOR, Director.

REGISTER OF PATENTS.

Gas-Lighters.—No. 201,513.

PINI, R., of Nice.

No. 33,089; Dec. 4, 1922. Convention date, July 25, 1922.

The subject of this invention is a simple form of spark gas-lighter. It is made of hardened spring-steel wire bent and looped so as to present the appearance rather of a large safety-pin, the "point" arm of which carries a steel spur, while the other arm is bent-in at right-angles, and carries a renewable striking plate of ferro-cerium.

It would appear that the lighter, which is grasped in the hand, is easy to employ; and the patentee claims that "fat" sparks are produced, that it has a long life, and that renewal of the ferro-cerium block is only necessary after about 15,000 lightings.

Separating Ammonia and Benzole Hydrocarbons from Coal Distillation Gases.—No. 182,803.

GESELLSCHAFT FÜR KOHLENTECHNIK MIT BESCHRÄNKTER HAFTUNG, of Dortmund.

No. 18,489; July 5, 1922. Convention date, July 7, 1921.

This invention relates to a process and apparatus for separating ammonia and benzole hydrocarbons under pressure from gases containing sulphuretted hydrogen, carbonic acid, and oxygen.

The patentees discuss the difficulties which normally are met in such a process owing to materials of construction which are suitable from a chemical point of view not standing-up to the physical conditions of temperature and pressure necessary for successfully carrying out the process.

These difficulties, they claim, are eliminated according to the present invention by removing from the gas its strongly corroding ingredients, chiefly sulphuretted hydrogen and carbonic acid, preferably together with ammonia, at comparatively low pressures, for which the strength of cast iron, ferro-silicon, and the like, is sufficient; while the separation of the benzole hydrocarbons is carried out at a high pressure with the use of materials of comparatively low chemical resistance, but of great mechanical strength—such as steel and the like. Benzole hydrocarbons begin to separate at a comparatively low pressure and at ordinary temperature (as is, for example, the case with lighting gas having the usual proportion of benzole). According to the invention a premature separation of these benzole hydrocarbons is prevented by separating ammonia and the highly corrosive constituents of the gas at a high temperature, such that at the correct pressure the gas is not yet saturated with benzole hydrocarbons. This operation is carried out without in any way interfering with the work of the compressor or with the procedure for satisfactorily concentrating ammonia.

Separation of the benzole hydrocarbons is carried out at a high pressure and at a still higher temperature, in order to avoid premature separation in the compressor or in the piping, whereupon the gas is cooled to about the ordinary temperature; the hydrocarbons being thus almost completely precipitated. The gas cooling might be done in stages; the single fractions of the benzole hydrocarbons being obtained separately or singly. The balance of the hydrocarbons is absorbed by an absorbent such as washing oil, or in some other suitable manner.

This method of working, say the patentees, has the great advantage of quickly and completely removing the benzole hydrocarbons from the compressor, owing to which it is possible to avoid local separation and the consequent dissolving of the lubricating oil, and jeopardizing or interfering with the working of the compressor.

Gas-Rings.—No. 204,737.

BARHAM, H. G. F., of Streatham, S.W. 16.

No. 4273; Nov. 14, 1922.

This invention relates to gas-rings, in using which a small-based receptacle requires, for efficient heating, a small flame, and therefore should be near the flame outlets, while with a larger-based receptacle, requiring a larger flame, the distance should be increased. In addition the amount of metal or other material used in the supports should be reduced to a minimum.

The patentee accordingly makes the supports of thin pierced steps, the length of the "risers" and "treads" of which is determined experimentally so as to secure the maximum efficiency for the particular type of flame used, successive treads being unequal in length.

Indicating Device for Prepayment Mechanism. No. 205,162.

ANDERSON, J., of Edinburgh.

No. 18,599; July 6, 1922.

This invention relates to means, in connection with prepayment mechanism, for indicating the "state of prepayment." The main object is to provide a particularly compact device which may be mounted as a single entity with the prepayment and, if desired, price-changing mechanism.

The indicator mechanism comprises an externally-screwed sleeve carrying a pointer over a scale; the sleeve being translated in one direction by movement of the prepayment mechanism, and in the opposite direction by the work of the meter. The rod carrying the screwed sleeve is mounted in a bracket attached to, and not wider than, the casing containing the prepayment mechanism and carrying the measuring-out mechanism, so that the whole can be applied to the meter or removed therefrom as a single unit. The sleeve is operated by a pinion on the end of the prepayment shaft, which may conveniently be the shaft of the epicyclic mechanism described in patent No. 183,157 connected with the price-changing mechanism described in patent No. 183,156 [see "JOURNAL" for Aug. 30, 1922, p. 478], though applicable to other types of mechanism.

The patentee describes a very compact form of attachment.

Change-Giving Meters.—No. 205,182.

SOUTH METROPOLITAN GAS COMPANY, of Old Kent Road, S.E. 15, BROWNE, H. M., of Eltham, S.E. 9, and STREDWICK, E. S. and W. S., both of Lee, S.E. 12.

No. 19,036; July 11, 1922.

Coin-change mechanism, according to this invention, may comprise a fitting which can be substituted for the existing door on the meter, no further alteration being required.

After a penny has done its work in the meter, it is directed down a chute in the apparatus, striking and actuating in its descent an arm on a rocking shaft, which is provided with pawls which turn a timing wheel a twelfth of a turn. The chute directs the pennies into a change-giving receptacle which normally is locked. When the twelfth penny passes down, a pin on the timing wheel actuates a rocking arm and frees a catch which previously held a deflector in such a position as not to interfere with the passage of the pennies to the change-giving receptacle. When the deflector is thus released, it automatically tilts into the path of the chute, and any pennies subsequently inserted are directed into a main receptacle—unless the twelve pennies are removed from the change-giving receptacle in the following manner.

The change-giving receptacle is provided with a door which normally is locked by a catch having a bevelled end to enable it to engage automatically when the door is closed. This door may conveniently be provided with a window through which the number of pennies in the receptacle can be seen. The receptacle is also provided with a slot which is covered by a slide until twelve pennies have been delivered to it. The slide is then automatically drawn away (so as to uncover the slot) by the tilting of the deflector, to which it is connected. A shilling can then be dropped through the slot into a rotatable coin holder so formed as to clear a lever controlling the lock on the door of the change-giving receptacle. When the coin holder is turned by a handle, the shilling strikes this lever and unlocks the door, allowing the twelve pennies to be withdrawn. At the same time, the shilling falls out of the coin holder into a separate, or the main, receptacle.

Destructive Distillation.—No. 205,268.

DAVIDSON, T. M., of Ruislip.

No. 22,198; Aug. 15, 1922.

According to this invention distillation is carried out in a modified form of the apparatus described in specification No. 195,711 [see "JOURNAL" for May 30, 1923, p. 544]. The retort has a central concentric gas and vapour outlet tube; and the charge is fed into the

space between the outer wall and the central tube under such conditions that it is compressed, and the residue is hard and dense.

In carrying the invention into effect, the retort is provided in two or more distinct zones, in one of which the temperature is maintained at a low degree, while the second is maintained at a medium or higher temperature; but the retort may comprise also a third part forming a cooling zone in which the air supply for the combustion of the gas for heating the second part of the retort is heated by the heat contained in the coke. However, the invention is not limited to the division of the retort into any number of temperature zones. It will be understood that the vapours and gases evolved in the distillation all pass through the hottest part of the retort and in contact with the hot residue before its discharge. By such means a relatively considerable amount of gas of high calorific value is secured. It is preferred to carry out the distillation so that the final temperature is within the range 500° to 800° C.

Drying Ammonium Sulphate.—No. 205,301.

WEYMAN, G., of Gateshead-on-Tyne.

No. 24,941; Sept. 14, 1922.

This invention relates to the drying of sulphate of ammonia; the process being designed to make the utmost use of the heat in the salt from the saturator, to retain air films round the crystals, and to obviate caking.

Accordingly, the salt is elevated to a point as high as convenient by employing a conveyor of any convenient type, which does not lead to crushing of the crystals, and thence allowed to fall in free contact with the atmosphere through a screen, to settle in an open heap in which the drying and cooling is allowed to be completed. The screen may be of an inclined stationary or mechanically agitated or revolving type, and preferredly has an attachment which ensures that any lumps are so crushed that they become small enough to pass through a further portion of the screen.

The crystals of salt, which fall in a light shower resembling a snowfall over as large an area as possible, may descend on to a distributing arrangement on the floor—for example, wooden grids arranged to lean one against the other, so as to give a triangular or conical section. The salt rests in a light open manner upon and against the grids, although a small portion may pass through the interstices of the grids; and ultimately there is formed a conical heap with an opening from outside into a space within the centre of the heap. Rapid drying and cooling is thus provided by the additional surface, the reduced thickness, and the lighter packing of the salt in the heap, which is allowed to attain any convenient size. As soon as it is necessary to remove salt, the shower is diverted by a screen or otherwise so that it will fall on one side rather than the other.

When it is desired to stack the salt in bulk, an arrangement of hurdle grids may be built up so as to form the core of a huge heap.

The patentee describes and illustrates apparatus for carrying out his invention.

Dry-Meter Diaphragms.—No. 205,354.

SHAW, A. G. (Sen.), and A. G. (Jun.), both of Adam Street, W.C. 2.

No. 29,444, of Oct. 28, 1922.

This invention relates to the diaphragm chambers of dry gas-meters. It provides for a metal central-feed chamber on each side of the usual dividing partition, the bottom of the chamber being formed for collecting liquor. Connection with the diaphragm pan is by means of a male screw-thread nipple engaging a female socket extending from the diaphragm pan.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Nov. 7.]

Nos. 26,963 to 27,693.

BREWSTER, A. W.—"Grease guard for gas-stoves." No. 27,448

BREWSTER, M. M.—See Brewster, A. W. No. 27,448.

DOBSON, E.—"Gas-governors." No. 27,230.

FOSTER ENGINEERING COMPANY, LTD.—See Dobson, E. No. 27,230.

FRICKER, E. H.—"Atmospheric gas-burners." No. 27,631.

GIBBONS BROS., LTD.—"Gas and air passages for regenerative furnaces." No. 26,963.

GLOVER, W. R.—"Gas-meters." No. 27,665.

GLOVER & Co., LTD., T.—See Glover, W. R. No. 27,665.

HELPS, G.—"Gas-cookers." No. 27,536.

HELPS, G.—"Gas-burners." No. 27,537.

ILLINGWORTH CARBONIZATION COMPANY, LTD.—"Manufacture of fuel." No. 27,047.

ILLINGWORTH, S. R.—See Illingworth Carbonization Company, Ltd. No. 27,047.

KÖHLER, F.—"Gas turbines." No. 27,177.

KOPPERS CO.—"Purifying gases." Nos. 27,676, 27,677.

MASTERS, E.—See Gibbons Bros., Ltd. No. 26,963.

MATTHIESSEN, C. H.—"Slide valves for gas-engines." No. 27,373.

PAGONIS, G. A.—"Rotary gas-engines." No. 27,076.

QUENEAU, A. L J.—"Retorts for carbonization of solid fuels." No 27,348.

STIMSON, E. F.—"Gas-cookers." No. 27,654.

STIMSON, E. F.—"Venting of gas-cookers." No. 27,655.

WESTWOOD, W. W. S.—"Gas-holders." No. 27,407.

WESTWOOD AND WRIGHTS.—See Westwood, W. W. S. No. 27,407.

WHITWELL, J. S.—"Gas-burners and blowpipes." No. 27,003.

WILDE, P. R.—"Radiator for utilizing waste heat of gas-stoves." No. 27,620.

The Doncaster Corporation Gas Department are running, for a few weeks, in Scot Lane, Doncaster, a special exhibition of domestic and other gas-appliances, with demonstrations and free advice.

LEGAL INTELLIGENCE.

HIGH COURT OF JUSTICE—KING'S BENCH DIVISION.

Monday, Nov. 12.

(*Before Mr. Justice* GREER.)

SULPHATE OF AMMONIA FEDERATION, LTD., v. SOUTH METROPOLITAN GAS COMPANY.

This action, which has reference to the proper method of keeping accounts under a pooling and equalization scheme, the nature of which has already been explained in our columns [see *ante*, p. 393], again came before Mr. Justice GREER to-day.

Mr. LE QUESNE, for the plaintiffs, said that on Oct. 31 Mr. Wright partially opened the case, and, on the application of the parties, it was allowed to stand till that day. In the interval, the parties and their accountants had met, and plaintiffs had supplied full accounts; but the time had not been sufficient to enable the accountants to master them. He was not surprised at this, as the accounts were very voluminous and complicated. In these circumstances, he was instructed to apply for a further adjournment.

Mr. WYLIE, for the defendants, supported the application, stating that his accountants had found considerable difficulty, in the time at their disposal, in dealing with the accounts which had been placed before them. He hoped, if a further adjournment were granted, the result would be that the Court would not be further troubled with the case.

His LORDSHIP, in ordering the case to stand over until Nov. 29, said he trusted this adjournment would result in the parties arriving at a settlement, as the case was eminently one which ought to be amicably settled.

Mr. LE QUESNE said he hoped the case would be settled; but, if not, it would be in the list to be heard on the 29th inst.

His LORDSHIP: Very well.

MISCELLANEOUS NEWS.

GAS REGULATION ACT APPLICATIONS.

The following further notices have appeared in the "London Gazette" with regard to applications to the Board of Trade for Orders under the Gas Regulation Act.

Hertford Gas Light Company.

The maximum price now authorized in respect of the supply of gas by the undertakers is 6s. per 1000 c.ft.; and the price they have asked the Board of Trade to substitute for this is 1s. 6d. per therm.

SPECIAL ORDER.

Harpenden District Gas Company.

The Company give notice of their intention to apply to the Board of Trade for a Special Order under section 10 to empower them to use scheduled lands for gas-works purposes, to convert the 8 p.ct stock into 6 p.ct. stock, to form a renewal fund out of revenue, and for other purposes.

GAS REGULATION ACT ORDER.

We have received from the Director of Gas Administration a copy of the following further Order made by the Board of Trade under section 1 of the Gas Regulation Act.

Dewsbury Corporation.

After the declared date, the maximum price in respect of gas supplied by the undertakers shall be 15d. per therm.

After the declared date, "1·6d.," "1·2d.," "0·8d.," and "therm" shall be substituted respectively for "8d.," "6d.," "4d.," and "1000 c.ft." in sub-section 4 of section 19 (extension of gas limits) of the Dewsbury Corporation Act, 1915.

Churnet Valley Gas Company, Ltd.—The revenue account for the year ended Sept. 30 shows a profit of £1566, and there is at the disposal of the Directors a total sum of £1913. At the meeting on the 23rd inst., they will recommend the payment of a dividend of 5 p.ct. per annum (less tax), the transfer of £200 to special reserve, and the writing-off of a like sum from meters, stoves, and fittings account. This will leave a carry-forward of £750.

Deal and an Electricity Supply.—The Deal Town Council, at their last monthly meeting, had before them a report of the Electricity Committee regarding negotiations which had taken place with the promoters of the East Kent Electricity Order; and amendments suggested by both parties were agreed to. A letter was read from the South-East Electric Power Company as to the laying of mains in the Council's area under the East Kent Electric Power Act, 1911. The Corporate Seal was ordered to be affixed to the agreement with Lieut.-Col. H. W. Woodall by which he undertakes, subject to the consent of the Council being given, to subscribe or cause to be subscribed, within six months after the date on which the Order comes into force, the sum of £5000 to be expended in the exercise of the powers of the Order. Considerable discussion also took place in the Walmer Urban District Council, with regard to the Order; and ultimately, without abandoning their attitude, the Council decided to take no further action in the matter.

TYNEMOUTH GAS ORDER.

A Draft Order, under section 10 of the Gas Regulation Act, 1920, for the Tynemouth Gas Company was the subject of a public inquiry at the offices of the Board of Trade last Friday week. Mr. H. C. HONEY (Director of Gas Administration) presided. There was, as a matter of fact, no opposition to the Order; but final agreement had only been come to at the eleventh hour, and so it happened that representatives of the Corporation and the Company, being in London, attended. Mr. Honey went through the Order clause by clause; and several interesting discussions took place with the promoters on matters of principle affecting gas legislation generally.

Mr. C. E. C. BROWNE (Messrs. Dyson, Bell, & Co., Parliamentary Agents) appeared for the Tynemouth Gas Company, and had with him Mr. Thomas Young (Chairman of the Company), Mr. Robert Mason (Vice-Chairman), Mr. J. J. Carr (Secretary), Mr. F. C. Willis (Engineer), and Mr. J. L. Kidd (Solicitor). Mr. R. H. Fox (Messrs. Durnford & Co., Parliamentary Agents) was present on behalf of the Tynemouth Corporation, together with Mr. T. Kershaw (Borough Treasurer); but they took little part in the proceedings beyond supporting the Company in regard to certain matters upon which an agreement had been arrived at.

Mr. BROWNE informed the Director that originally there were three opponents—the Corporation, the London and North Eastern Railway Company, and the Tynemouth and District Electric Traction Company. So far as the Corporation were concerned, they had adopted a very reasonable attitude, and had come to terms. As to the Railway Company, an agreement had been come to except as regarded the question of high-pressure air, which had been gone into thoroughly in the Brentford case; and it had been agreed by the Gas Company and the Railway Company to abide by the decision in that case. With reference to the Tynemouth and District Electric Traction Company, their opposition was solely in regard to the power to utilize pipes for ancillary purposes; and an arrangement had been come to which the Traction Company had accepted. Since then it had occurred to him that a slight modification of this arrangement might be made in the interest of the Gas Company, without affecting the Traction Company; and a proposal was now being considered by the latter Company. [This is entirely a small local matter, and the details need not be entered into here.] Going through the clauses seriatim, he said the Gas Company was incorporated as a statutory concern in 1867, with a maximum price of 3s. per 1000 c.ft., which remained until the passing of the Gas Regulation Act. Since then an Order had been obtained containing a price of 12·6d. per therm. The calorific value of the gas supplied was 470 B.Th.U., and the actual selling price to-day 10d. per therm. The maximum dividend on the ordinary stock was 5 p ct. By clause 4 of the Order, it was proposed that any new capital issued hereafter under the Company's Act of 1904 should bear a rate of 6½ p.ct. if ordinary stock, or 6 p.ct. if preference stock. These figures were ½ p.ct. less than originally proposed, and the alteration was part of the agreement with the Corporation. Clause 5 was really a re-enactment of what the Company's powers were to-day. The Company obtained a consent, under the Capital Issues Act, to borrow to the extent of half of the issued capital for the time being. Some people felt doubtful as to the position when the Capital Issues Act expired; and it was proposed to include similar powers in the present Order. The figure of half the issued capital for the time being would include £48,742 added on conversion of the stock from a 10 p.ct. to a 5 p.ct. basis; but he thought the Director would agree that this should not be deducted for the present purpose.

Mr. HONEY said he was not sure on this point.

Mr. BROWNE replied that it had been done in many cases. In fact, speaking off-hand, he did not know of a case in which the promoters had been obliged to knock off the amount added on conversion in arriving at the borrowing powers. Originally, the Company had a 10 p.ct. stock; and the half borrowing powers in respect of the paid-up capital would have applied to this, had there been no conversion. Borrowing, obviously, was the cheapest form of raising capital, and it was therefore in the interests of the consumer that the half on the total amount of the capital should be allowed. Continuing, he said clause 9 gave the Company power to offer stock for subscription, with the consent of the Board of Trade. The object was to be able, in times of difficulty, to offer a block of stock to a financial house who might be willing to take it. It was a power contained in the Capital Issues Act, and had been granted in many cases. The Corporation had looked into it, and refrained from objecting.

Mr. HONEY: I think we must take that clause out.

Mr. BROWNE pointed out that the clause was subject to the consent of the Board of Trade, and the reason for it was that it might be possible to place stock more advantageously than by auction. He knew of one case in which, through the inability of the company to do this, stock was sold by auction on less favourable terms than a block could have been disposed of in the manner suggested by the clause.

Mr. HONEY said he gathered that the policy of Parliament was to return as soon as possible to ordinary conditions in regard to raising capital, and to get rid of emergency provisions allowed during the war. He believed the Chairman of Committees had made this clear.

Mr. BROWNE reminded Mr. Honey that the clause was originally allowed in the case of the Sheffield Gas Company, and later in the Windsor case.

Mr. HONEY replied that it was in the Windsor case that the Chairman of Committees had made his statement on this point; and the power now asked for was granted in that case for a period of five years, in addition to which the consent of the Board of Trade had to be obtained. He did not think the Board of Trade would consider the clause unless special circumstances were shown in this case.

Mr. BROWNE said clause 10 dealt with the issue of redeemable debenture and preference stock, and followed the Ipswich precedent.

Mr. HONEY was not inclined to accept Ipswich as a precedent, which was a very complicated financial Order, and was the subject of agreement after prolonged negotiations between the Gas Company and the Corporation.

Mr. BROWNE remarked that the intention was that, if redeemable debenture stock was issued, it could only be redeemed by issuing other debenture stock. It was not proposed to substitute ordinary for debenture stock. There was some ambiguity on the point in the wording, as there also was in the Capital Issues Act; and he would prepare an amendment, and submit it for approval.

SPECIAL PURPOSES AND RENEWAL FUNDS.

A long discussion took place upon clauses 11 and 12, relating to the creation of a special purposes fund and a renewal fund.

Mr. BROWNE said the only case in which objection had been made and sustained to these clauses was where, as in the present one, they referred to a maximum-price company; but there were instances of maximum-price companies where such clauses had been allowed without any qualification. One such was the Weston-super-Mare Order of 1922. In the present case, there had been considerable discussion between the promoters and the Corporation, who were at first very much opposed to the proposal, pointing out that it meant a multiplication of reserve funds, and that to some extent the statutory reserve fund under the Companies Act would be overlapped by the special purposes fund now proposed. The Company recognized that this would be the case, and the arrangement which had been come to was that the special purposes fund should be limited in the annual appropriations to one-half of one per cent. per annum of the total paid-up capital of the Company, instead of the 1 p.ct. proposed in the draft Order; the total amount of the fund to be limited to one-twentieth of the paid-up capital, instead of one-tenth, including premiums. The renewal fund was similarly to be limited to one-half of one per cent. per annum of the paid-up capital for the time being, and the total amount of the fund to one-twentieth of the paid-up capital, instead of one-tenth, as in the draft Order. Further, it had been agreed with the Corporation that the reserve fund should be reduced to one-half of the statutory maximum—namely, one-twentieth of the paid-up capital—though the annual appropriations to this fund would be unlimited. It had also been agreed that the purposes to which the statutory reserve fund might be applied should be reduced to the extent to which the special purposes fund and renewal fund applied—viz., by excluding from the reserve fund purposes the "extraordinary claim or demand." Therefore, though there would be three funds, they would all be applicable to distinct and separate purposes, and the total amount would only slightly exceed the amount of the statutory reserve fund in the ordinary way. It was because the statutory reserve fund did not cover many contingencies covered by a special purposes fund and a renewals fund that the clauses were inserted.

Mr. HONEY: How is the "extraordinary claim or demand" met at the moment?

Mr. BROWNE said he did not know that it was compulsorily met by the statutory reserve fund; and if there were no reserve fund, the "extraordinary claim or demand" could only be met out of revenue or by the issue of further capital.

Mr. HONEY suggested that it would be essentially a revenue charge.

Mr. BROWNE'S reply was that it would all depend upon the nature of the "extraordinary claim or demand." Supposing there were an explosion, and the works had to be rebuilt, he was not at all sure that this would necessarily be a revenue charge. At any rate, the existence of a special purposes fund would remove any doubt.

Mr. HONEY said what would really happen if there was an exceptional charge in any year would be that the shareholder would be short of dividend.

Mr. BROWNE: Yes; and the consumer would have to pay more for his gas. Moreover, there would be recourse to the reserve fund, for the purpose of making up, as far as possible, the dividend deficiency; and it seems simpler, therefore, to have a fund which can be drawn upon at once to deal with the exceptional demand in the case of a contingency of the kind which has been referred to.

Mr. HONEY said the position was really this: There were two distinct financial methods in the gas industry. One applied to the sliding-scale company, where there were special purposes and renewal funds, and where the dividends stood on a yearly basis, and there was no question of paying-off back dividends, and where any reserve fund to equalize dividends in any year was made up entirely of the shareholders' money, out of dividends which might have been distributed in previous years. On the other hand, there was the case of the maximum dividend company, where there was a reserve fund which was not entirely the shareholders' money, but was made up out of profits in excess of the amount required to pay the maximum dividend. In this case, there was power for the company to pay back dividends out of the reserve fund; the money belonging partly to the shareholders and partly to the consumers. But there was not a Special Purposes Fund. The two financial schemes were water-tight in each case.

Mr. BROWNE suggested that the principle that extraordinary claims and demands should be met out of revenue could be applied to both sliding-scale and maximum dividend companies.

Mr. HONEY said this was not so, because in the case of the sliding-scale companies back dividends were not payable, whereas in the case of the maximum price companies they were.

Mr. BROWNE pointed out that the sliding-scale shareholder only lost his dividend if there were no money to pay the authorized rate either in the shareholders' reserve fund or the carry-forward.

Mr. HONEY said in that case they were taking the money out of their own pockets, and not partly out of the pockets of the consumers. His general answer to the points raised by Mr. Browne was that, if the Tynemouth Company wished to have the benefit of the sliding-scale financial scheme, they had better take the sliding-scale.

Mr. BROWNE argued that this was not a special form of legislation for the benefit of sliding-scale companies, which was not applicable to maximum dividend companies. Not only the Board of Trade, but Parliament in the past, had given these powers to maximum dividend companies. He seriously urged the Director to see his way to agree to the proposals of the Company, which had been arrived at after careful discussion with the Corporation. There was one point he had not mentioned—that the existing statutory reserve fund was a substantial one; and it was proposed to take a considerable sum from it and apply it at once as the nucleus of the special purposes fund.

Mr. FOX, speaking on behalf of the Corporation, said these clauses had at first been strongly criticized, much in the same way that the

Director of Gas Administration had been criticizing them; but when the Borough Treasurer went into them, he advised the Corporation that it was to the consumers' benefit to have funds on the lines proposed now, though not on the lines originally proposed in the Order.

Mr. HONEY asked why the Company had not adopted the sliding-scale.

Mr. BROWNE said that since the war financial conditions had been very difficult, and it had been impossible to arrive at what would be a air standard price to substitute for the present maximum. If financial conditions became normal in the next few years, it might be a matter which the Company would have to take into consideration.

Mr. HONEY promised to consider the arguments that had been put before him, and added that he believed the only case in which the Board of Trade had permitted a special purposes fund for a maximum price company was Weston-super-Mare. In that case, Parliament had previously allowed the Company a sort of insurance fund, and it was decided to do away with the insurance fund and call it a special purposes fund.

Mr. BROWNE, in answer to further questions, said that the reserve fund of the Tynemouth Company at present was about £1500 below the maximum permissible, and that when this maximum was reached the Company would have to cease making appropriations to it, and apply the money to the reduction of the price of gas.

INVESTING THE RESERVE FUND.

Clause 14 authorizes the Directors to invest the reserve fund in any securities in which Trustees are by law authorized to invest money, or in such other manner as shall be authorized by a resolution of the Company.

Mr. BROWNE said he had previously submitted this clause to the Director, who had not seen his way to allow it. The reasons, of course, were not known; but in the present case those concerned had tried hard to see what serious objection there could be to the clause, and could not find one. The directors of sliding-scale companies had this power.

Mr. HONEY remarked that here, again, was a difference between a sliding scale company and a maximum-dividend company. In the present case, the reserve fund was not the property of the shareholders, whereas in the other it was their own money.

Mr. BROWNE suggested that the real purpose of the reserve fund was to equalize dividends in the case of the maximum dividend companies, and therefore, though the fund had not been built up entirely by the shareholders, it had really been given to the shareholders by Parliament.

Mr. HONEY asked whether the intention of the reserve fund was not rather to equalize prices than to equalize dividends. In the case of sliding-scale companies, the reserve fund was set aside by the shareholders themselves to equalize dividends.

Mr. BROWNE'S reply was that, whether the primary object of the reserve fund was to equalize dividends or to equalize prices, the shareholders were allowed to resort to that fund for making up their dividends; and this being the normal purpose of the fund, he submitted that the Directors were not likely to invest it in a foolish or speculative manner. He could see no real difference between a sliding-scale company and a maximum dividend company in this respect. Continuing, he said clause 17 dealt with power to grant pensions and make subscriptions; and an amendment had been inserted, in agreement with the Corporation, that any subscription should only be to funds raised in connection with the gas industry.

Mr. FOX remarked that this was a form of words suggested by Sir Ernest Moon, K.C., the Speaker's Counsel, in the Hoylake case.

Mr. BROWNE said clause 20 was the stand-by supply clause; but in this case the Company had agreed to the figure of 15s. as the minimum charge, instead of 25s., as inserted in the draft Order originally. Another slight amendment to meet the Corporation was that this minimum should not apply in cases where the gas was supplied through a meter of more than 10 lights capacity. The original drafting was "less than 10 lights capacity," so that the modification brought in the 10-light meter, whereas the previous wording did not. Clause 22 related to the power to utilize pipes for ancillary purposes; and an agreement had been come to with the Corporation that they should be entitled to complain as to route as well as to the precise position in the particular street. The Company asked for the insertion of the word "maintain," as well as "lay down, repair, alter, remove . . . ," in order to legalize the maintenance of two existing mains, which had been laid lawfully, but without parliamentary sanction. Clause 23 dealt with specifications with regard to minimum size and material of pipes, &c., to be used in connection with the Company's supply. Apropos of this, railway companies seemed to consider themselves a privileged class of gas consumers; and in order to save trouble the Company had adopted, for the protection of the railway companies, the wording of sub-section 8 of the clause relating to this matter in the Gas Light and Coke Company's Order of 1922. This sub-section read as follows:

> The provision of this section relating to pipes and the fittings thereof shall not apply to any pipes or fittings belonging to a railway company and laid or placed, or intended to be laid or placed, in any premises (not being a dwelling house or premises appurtenant to a dwelling house) of that Company
>
> (*a*) elsewhere than between the main of the Gas Light Company and the meter, or
>
> (*b*) between such main and the meter unless and except so far as such pipes or fittings are covered over or intended to be covered over.

The Tynemouth Company had also agreed to give the Corporation notice of any application for approval by the Board of Trade of specifications made under this clause. Clause 24 authorized the Company to enter into contracts for bulk supply, and at the same time authorized other people, who might be distributors outside the company's limits, to take supply in bulk from the Company. The object was to make the position quite clear; and he could see no objection to authorizing the other side to take a supply, if the Company were authorized to give it, for distribution outside the limits of supply of the Tynemouth Company.

Mr. HONEY said he thought the clause would have to be in the model form, which did not give such authority.

Mr. BROWNE pointed out that powers to distribute gas would be granted for the asking in the circumstances in which a bulk supply was taken from a neighbouring authority under such a clause as this; and he could see no harm in making the clause give this power to such a gas authority when the clause authorized the Tynemouth Company to give the supply in bulk to that authority.

Mr. HONEY agreed that probably there was no harm; but the question was whether the Board of Trade were empowered to do it.

Mr. BROWNE said it would be useless to empower the Company to give a supply in bulk, without at the same time authorizing the other party to the contract to distribute the gas so supplied. It had been done by Parliament.

Mr. HONEY: Parliament may do what it pleases; but we are bound to do what Parliament says we may do.

The remaining clauses in the Order are in common form.

STATUTORY COMPANIES AND THE USE OF PUBLIC STREETS.

A year ago, the London County Council passed an estimate of expenditure on capital account of £600, submitted by the Finance Committee, for the removal of certain gas-mains in Shadwell and the laying of others in place of them, and at the same time referred the question of the rights and obligations of private concessioners and public authorities in this connection to the General Purposes Committee for consideration and report, and for the formulating of a policy which will protect public interests for the future. The Council, for the purpose of laying out the King Edward Memorial Park, Shadwell, acquired land abutting on both sides of public highways under which gas-mains had been laid under statutory powers by the Commercial Gas Company. The Council obtained a closing order of the Justices in respect of the highways in question; but in view of the provisions of the Gas-Works Clauses Acts, the order did not affect the rights of the Gas Company to retain the mains in position, and to repair or alter them when necessary. Owing to the alteration of the levels in laying out the park, it was considered necessary to have the mains taken out and relaid outside the park. In view of the statutory rights of the Gas Company to retain the mains in their old position, the Company were not prepared to remove and relay them in other positions, unless the cost involved was borne by the Council.

At yesterday's meeting of the Council, the General Purposes Committee submitted a report, in the course of which they said: It would appear that no effective scheme can be devised to prevent the Council from being more or less in the hands of the Company in a case such as that which arose at Shadwell, and that position can only be altered by further legislation. We are of opinion that it is undesirable that companies which carry on undertakings for profit, and are granted concessions to use the public streets without charge for the purpose of laying down their pipes or wires, should have the right to require a local authority to bear the cost of removing and relaying pipes, &c., when such removal and relaying become necessary in connection with alterations to highways which may be carried out in the public interest. We have considered whether legislation should be promoted to deal with the matter by providing that, in any case in which the Council or a London local authority hereafter stops-up or alters a street, they shall be freed from any liability to defray the cost of removing or relaying pipes and wires belonging to private companies in this street; but we are advised that such legislation would probably be so strenuously opposed that it would have little chance of success if promoted by means of a Private Bill. In the case of new undertakings for which statutory powers are sought, protection could, of course, be asked for; but that would not to any extent meet the present difficulties, having regard to the powers already granted to existing undertakers. We do not think, however, that the matter should be allowed to drop, and we feel that some effective action might be taken if it received the support of all the road authorities. We therefore propose that the Council should express an opinion on the subject, and that the various associations representing the road authorities in England and Wales should be asked for their observations thereon. We recommend

(*a*) That, in the opinion of the Council, the grant to private statutory companies of the right to use public streets without charge for the purpose of laying-down pipes or wires ought not to involve an obligation upon the local authorities to keep such streets unaltered for ever, or, if they be altered, to bear the cost of any necessary removal and relaying of the pipes or wires.

(*b*) That the foregoing resolution be communicated to the Metropolitan Boroughs Standing Joint Committee, the County Councils' Association, the Association of Municipal Corporations, the Urban District Councils' Association, and the Rural District Councils' Association, and that they be asked for their observations thereon.

Price Reduction in Hull.—The Town Clerk submitted to the Hull Corporation Gas Committee a letter from the Secretary of the British Gas Light Company, Ltd., stating that his Directors had decided to reduce the price of gas from 8½d. to 8d. per therm; and also that under the terms of the Company's agreement with the Corporation the price is due for revision as from June 30 last. The Corporation could claim that they were entitled to be supplied as from July 1, 1923, at the price of 7·46d. per therm; but the Directors had decided to calculate the price as though the reduction to ordinary consumers to take effect on Oct. 1 had come into operation on July 1, and the price charged by the Company for the supply in bulk would therefore be 7d. per therm as from July 1. On the motion of Mr. Newham, seconded by Mr. Bell, it was decided that the price of gas to consumers in the Old Town be reduced from 5s. to 4s. 6d. per 1000 c.ft. from the commencement of the current quarter.

THE NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

There has been little change in the market during the past week, but, if anything, there is a feeling of a slightly easier tendency. Coke shipments to Germany have been suspended to a serious extent, with the result that quantities of coke have come back on to this market. This has made buyers of coking coals rather hesitate before committing themselves forward; and this is likely to react on all classes of Durham unscreened, including gas qualities. There has consequently been a lull in business for next year, and practically nothing doing. While collieries continue to quote 24s. for specials and best qualities (Holmside, Boldon, New Pelton class), and 22s. 6d. and 23s. for seconds, there is a feeling that they are not quite so strong in their ideas, and that, unless there is some change, they might soon be willing to negotiate at slightly reduced figures. Up to the present, however, they have continued to hold out for their price.

For prompt, and up to the end of this year, the position remains firm; collieries—on paper at any rate—having very little to sell, and asking 24s. to 24s. 6d. for best gas. Bad weather has in some instances dislocated tonnage, and a few spot lots have been sold as low as 23s. 6d. by collieries in need of a "team." But these are only the exceptional bargains which are always to be had from time to time at this season of the year.

The West Dunston staiths of the London and North-Eastern Railway Company were opened on the 12th. This provides three additional berths, which, it is hoped, will do something to ease the congestion up-river at Dunston, where certain collieries can ship at 1s. a ton cheaper than down below at Tyne Dock and the Commissioners' staiths. The West Dunston staiths were completed before the war; but it is only in the last few months that the Railway Company have seen fit to prepare them for use, in spite of incessant agitation on the part of the coal trade.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From a Local Correspondent.

There is a slight increase in the demand in Yorkshire and Lancashire for various descriptions of household coal; the best qualities being in the greatest request. Generally speaking, however, there does not appear to be any stocks on hand at the collieries.

The industrial situation does not improve, although better-grade fuels command attention.

The gas coal market is fairly well advanced in regard to buying. A few concerns are open for spot lots; but these are of no serious consequence in the matter of tonnage. As a result, prices remain firm.

There has been a slight falling off in the export section, particularly to France and Belgium. The Germans continue to buy various qualities at good prices, for which they pay cash in sterling on this side, which is somewhat of a mystery to the English sellers, owing to the fluctuation of the market.

COAL TRADE IN THE MIDLANDS.

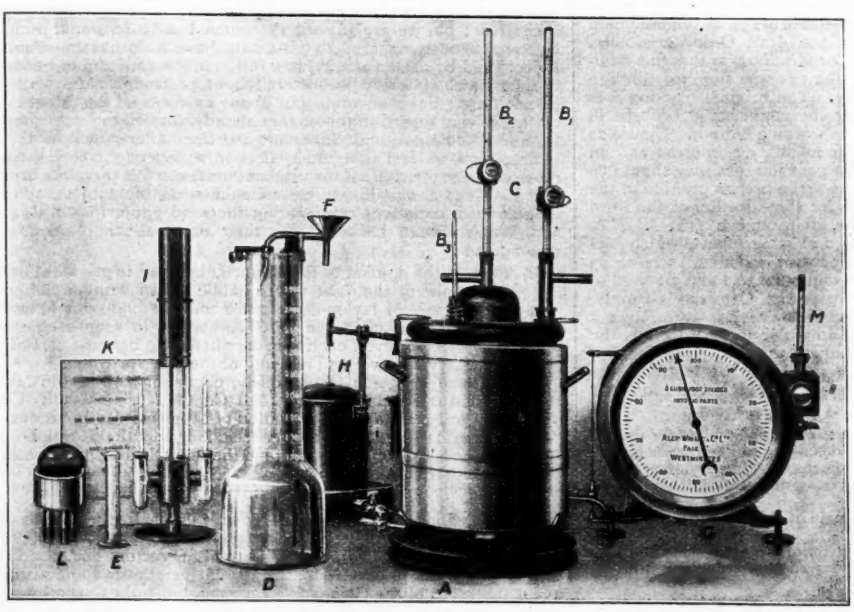
From our Local Correspondent.

The market for gas coal presents no special feature in this area. Deliveries are being taken steadily against contracts. It does not appear that spot lots are so over-abundant as to involve the disorganization that was apparent a few weeks ago. Pits are making a regular output in the majority of cases, and the transport service is working smoothly, apart from some local shortages of wagons. There are warnings, however, that any considerable expansion of trade would find carrying capacity inadequate. It is stated that some of the less remunerative traffics in the Black Country are suffering from insufficiency of railway-owned rolling stock. Certain Cannock Chase collieries have also had to readjust their working since the advent of November, through difficulties in the way of prompt handling of coal after it has been brought to the surface. November fogs have had something to do with aggravating the conditions. Mild weather has checked the demand for best house coals, with the result of unbalancing the market in a minor degree; but frost and snow are now tending to correct this. There are still stocks in sellers' hands awaiting clearance. Evidence accumulates that the improved position with regard to slacks and the steady absorption of beans and D. S. nuts are due in some measure, perhaps primarily, to a slow increase in the industrial consumption at home. Confirmatory evidence of slightly better conditions in most of the manufacturing centres is likewise forthcoming from gas undertakings.

Coke continues to sell well. There is a decided quickening of demand from the blast-furnaces. The iron market in this district is stronger, but very sensitive to any advance of price.

The Tankless Gasholder Company, Ltd., has been registered as a private company, with a nominal capital of £4500 in £1 shares, to acquire an exclusive licence to erect, work, sell, and manufacture tankless gasholders in the terms of a certain draft licence made with the Machinenfabrick, Augsburg, Nurnberg, A.G., of Nurnberg and Gustavaburg, and to carry on the business of gas engineers, gas-plant manufacturers, gas-makers, ironfounders, &c. The first Directors are: Messrs. S. Cutler and E. E. Cutler (deemed to be appointed by Messrs. Samuel Cutler and Sons, Ltd.), Messrs. C. H. Wright and R. J. Milbourne (deemed to be appointed by Messrs. C. & W. Walker, Ltd.), and Messrs. R. B. Hodgson and W. Besswick (deemed to be appointed by Messrs. Ashmore, Benson, Pease and Co., Ltd.).

BOYS CALORIMETER



GAS REGULATION ACT, 1920.

CALORIMETER

as prescribed

by

GAS REFEREES.

ALEXANDER WRIGHT & Co., Ltd.,

1, WESTMINSTER PALACE GARDENS,

WESTMINSTER, S.W. 1.

TRADE NOTES.

Messrs. Meldrums, Limited.

During the month of October this firm's orders included forced-draught furnaces for sixteen boilers, stokers for five boilers, seven destructors, one disinfector, and one gas-scrubber. The last named is a washer-scrubber of a capacity of 22 million c.ft. per day.

Steam and Electric Cranes.

An interesting descriptive catalogue has reached us from the Bedford Engineering Company, Bedford, in which details of construction of steam and electric cranes are given. The firm have certainly ascertained the kind of information that should be furnished by a catalogue of their productions; and that given relates not only to standard cranes, but also to special features to suit local conditions and requirements. Altogether, the pamphlet is most pleasing.

The "Essex" Rotary Pump.

This pump, manufactured by Messrs. Jobson and Beckwith, Ltd., No. 104, High Holborn, W.C. 1, is positive in action, and may be belt or motor driven. It has no springs, valves, or plungers; nor is there any delicate mechanism to get out of order. The vanes are located in a motor, and the "throw" is given to the vanes by a pin. In actual practice it is found that the vanes are thrown against the side of the pump. A small semi-circular pin is fitted into a groove on the end of each vane; and the pin can be slipped out by hand and replaced in a few seconds. The motor is guided on both sides, so that there is no "play." The pump will handle all classes of liquid—oils, chemicals, water, &c.

Ventilation.

We have received from Messrs. Ewart & Son, Ltd., a copy of their new catalogue dealing with ventilation. Roof ventilators are usually placed in exposed positions, and if made of galvanized iron, quickly rust unless frequently painted. The cost of painting, particularly when fixed in awkward places, adds to the expense of the ventilator. The "Ewart" ventilator is constructed of stout copper, requires no painting, and is almost as durable as the building itself. It is riveted together and is fire-proof. Should readers of the "JOURNAL" desire to have a copy of the new catalogue, Messrs. Ewart & Son, Ltd., Nos. 346, 348, and 350, Euston Road, N.W. 1, will be glad to send by return of post on application.

Standard Price of the Commercial Gas Company.—At a meeting of the London County Council last week, the report of the Public Control Committee concerning the application to the Board of Trade for an Order under section 1 (3) of the Gas Regulation Act, 1920, to reduce the standard price applicable to the Commercial Gas Company [see "JOURNAL" for Nov. 7, p. 395] was adopted without comment.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Nov.* 12.

In the London tar products market pitch is quiet; but the price is steady at about 142s. 6d. per ton f.o.b. at makers' works. Creosote is in good demand, and supplies are scarce. The price is firm at from 9¾d. to 10d. per gallon. Pyridine is a strong market at about 22s. 6d. to 25s. per gallon. Solvent naphtha 95-160 is quiet at about 1s. 6d. per gallon; pure toluole being 1s. 10d. per gallon, and pure benzole 1s. 7d. per gallon. Other products are without change.

Tar Products in the Provinces.

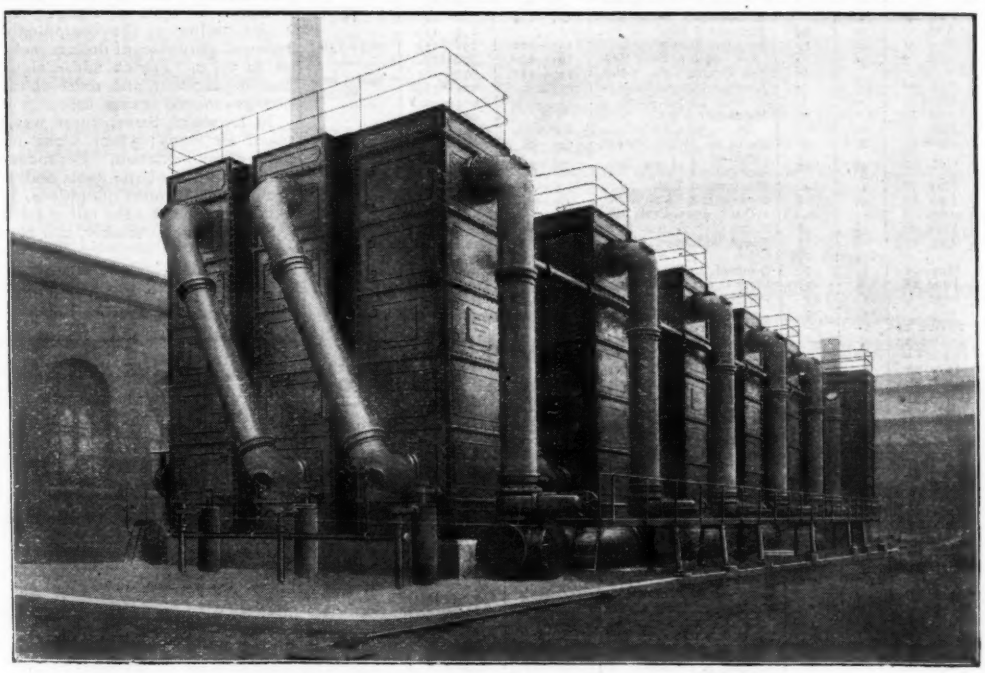
Nov. 12.

Business in tar products has been quiet during the past week; and owing to the continued abstention of buyers from the market for pitch, this article has gone back in price to some extent. Sellers are reporting in Manchester at 127s. 6d. f.a.s.; while it is probable that a firm offer at 132s. 6d. f.o.b. on the East Coast would be accepted. It must, however, be borne in mind that these reductions are not the actual result of business done; and in view of the fact that it is certain that a very considerable quantity of pitch still remains to be purchased, and that unsold stocks are decidedly small, there is no reason why a revival in price should not take place before long.

The average values for gas-works products during last week were: Gas-works coal tar, 76s. to 81s. Pitch, East Coast, 130s. to 132s. 6d. f.o.b. West Coast—Manchester, 125s. to 127s. 6d.; Liverpool, 126s. to 128s. 6d.; Clyde, 127s. to 130s. Benzole 90 p.ct., North, 1s. 0½d. to 1s. 1d.; crude 65 p.ct. at 120° C., 9½d. to 10d. naked at makers' works; 50-90 p.ct., naked, North, 1s. 5d. to 1s. 7d. Toluole, naked, North, 1s. 5d. to 1s. 7d., nominal. Coal tar crude naphtha in bulk, North, 8d. to 8¼d. Solvent naphtha, naked, North, 1s. 2½d. to 1s. 4d. Heavy naphtha, North, 1s. 5½d. to 1s. 7½d. Creosote, in bulk, North, liquid, 8d. to 8¼d.; salty, 7½d. to 8d.; Scotland, 6¾d. to 7½d. Heavy oils, in bulk, North, 8¼d. to 9d. Carbolic acid, 60 p.ct., 3s. 4d. to 3s. 5d. prompt. Naphthalene, £15 to £16; salts, £6 to £8, bags included. Anthracene, "A" quality, 4d. per minimum 40 p.ct., purely nominal; "B" unsaleable.

Ellesmere Gas-Works.—The Gas Committee of the Ellesmere Urban District Council last week reported that an offer had been received from Mr. A. Hallett, a member of the Council, to go into the accounts of the gas department, to see how they stood, and whether the works could not be made to pay. They recommended that his offer be accepted. The Council approved the recommendation for Mr. Hallett to test the workings and accounts for twelve months, in order to ascertain the cost of production of gas, with a view to reducing the present high prices.

LATEST IMPROVEMENTS—"BEARSCOT" TUBES—MADE IN ALL SIZES.



DEMPSTERS' WATER COOLED CONDENSERS.
CAPACITY "20 MILLION" CUBIC FEET OF GAS PER DAY.

R. & J. DEMPSTER, LTD., MANCHESTER.
LONDON OFFICE: 34, VICTORIA STREET, WESTMINSTER, S.W.1.

STOCK MARKET REPORT.

THE Stock Markets last week were in a nervous and apprehensive mood, and the uncertainty of the home and international outlook had more than a restrictive influence on the Exchange. The prospect of a General Election is the chief disturbing factor. The possibility of a Labour majority on a capital levy ticket produced many nervous sellers; and, speaking generally, prices dropped in all markets. This was particularly noticeable in Home Government Stocks; the Five p.ct. War Loan, Five p.ct. War Bonds, Conversion Loan, and Funding Loan showed substantial falls on the week. On Friday, an attempt was made to rally prices; but a continuance of selling ascribed to foreign holders brought the War Loan to par.

Gas Stocks were perhaps less affected by the disturbing conditions. The proximity of the inquiry into the Gas Light and Coke Company's Order under the Gas Regulation Act—the result of which will be awaited with interest—probably affected the business done in this Company's stock. During the week the following changes took place in Gas quotations on the London Stock Exchange: Hong-Kong and China rose ½, Bombay fell ½, British "A," Gas Light ordinary, and Gas Light 4 p.ct. preference each dropped 1. Imperial Continental fell 3, Primitiva 5 p.ct. preference ⅛, and South Metropolitan ordinary ½.

The following transactions were recorded: On Monday, Brentford "A" 103¼, "B" 103, British 122, Cape Town and District 7, 7⅛, Gas Light and Coke 94⅜, 95, 95¼, 95⅜, 95½, 96, 3½ p.ct. maximum 66⅛, Montevideo 51, Primitiva 5 p.ct. preference 26s., 27s. 6d., South Metropolitan 98, 98¼, 98⅜, South Suburban 5 p.ct. debenture 101½, Wandsworth "B" 120, 120½. Supplementary prices, Brighton and Hove 5 p.ct. debenture 98. On Tuesday, Alliance and Dublin 69, Bombay 5⅛, Bournemouth "B" 7 p.ct. 12½, Brentford 5 p.ct. preference 93, British Gas Light 7 p.ct. preference 122½, 123, Commercial 4 p.ct. 95½, Continental Union 30, 31, European 8, Gas Light and Coke 94½, 94⅜, 95⅛, 95¼, 95½, 3½ p.ct. maximum 65⅜, 4 p.ct. consolidated preference 80, Imperial Continental 156, Primitiva 5s. 6d., 5 p.ct. preference 27s. 6d., South Metropolitan 98. Supplementary prices, Metropolitan (of Melbourne) 7⅛, Watford 3½ p.ct. "B" 92½. On Wednesday, Alliance and Dublin 68, 68⅛, Bombay 5⅛, Brentford 5 p ct. preference 93½, 93⅝, Brighton and Hove (10 p.ct. standard) 177, British Gas Light 123½, Cardiff Gas Light and Coke 7½ p.ct. debenture 112, 112½, Gas Light and Coke 94⅝, 94½, 95, 95¼, 3 p.ct. debenture 63, Imperial Continental 155, Oriental 100½, 101½, South Metropolitan 97½, 97⅞, 98⅛, 98¾, 6½ p.ct. debenture 107, South Suburban 5 p.ct. 100½, Tottenham "B" 102½. On Thursday, Alliance and Dublin 68⅝, Bombay 5 9/32, 5⅛, Commercial 4 p.ct. 95⅛, Continental Union 7 p.ct. preference 77, 79, European 7⅞, 8, Gas Light and Coke 94⅛, 94⅜, 95, 95⅛, 3½ p.ct. maximum 65⅜, 4 p.ct. preference 80, Hong-Kong and China 16, Imperial Continental 153, 154, 154⅜, South Barracas 1½d., South Metropolitan 97⅜, 98. On Friday, Alliance and Dublin 68, 68⅛, 68⅜, 68⅝, Commercial 4 p.ct. 95⅛, Continental Union 31½, European 8, Gas Light 94, 94⅛, 94⅜, 94⅝, 4 p.ct. preference 79, 79½, 80½, Imperial Continental 153, Primitiva 5s., 5 p.ct. preference 26s., 26s 3d., 4 p.ct. debenture 57, South Metropolitan 97½, 97¾, 98½. Supplementary prices, Uxbridge 5 p.ct. 96.

The disturbing news from Germany had a deleterious effect on the Foreign Exchange Market. In spite of a slight recovery in the dollar-sterling at the beginning of the week, renewed purchases of dollars sent the rate back to $4.39½ c. French and Belgian currencies also depreciated, and most of the neutral exchanges moved against us.

In Lombard Street, there was a strong demand for loans; 3 p.ct. being paid for overnight accommodation. But money was abundant at the end of the week, and the loan rate declined. Discount quotations, on the other hand, hardened on the fall in sterling.

Silver rose appreciably, and closed at 32 5/16 d. per oz.

The Bank of England rate remains at 4 p.ct., to which figure it was raised from 3 p.ct. on July 5.

ANTE-WAR PRICES AND DIVIDENDS, LATEST DIVIDENDS, AND LAST WEEK'S TRANSACTIONS.

Issue.	Share.	When ex-Dividend.	Ante-War Dividend & Bonus.	Last Divid. at Rate of	NAME.	Closing Prices, July 30, 1914.	Variation. Quotations, Nov. 9.	Variation. Lowest and Highest Prices of Transactions.
£			p.c.	% p.a.				
131,978	Stk.	Aug. 9	—	5	Aldershot 5 p.c. max. C.	..	72—77	...
217,992	,,	,,	4	4	Do. 4 p.c. Pref.	..	70—75	...
1,551,868	,,	Oct. 4	2½	5½	Alliance & Dublin Ord.	59—64	68—73	68—69
374,000	,,	July 12	4	4	Do. 4 p.c. Deb.	76—79	62—67	...
280,000	5	Oct. 18	7½	8	Bombay, Ltd.	5⅛—5⅜	5⅛—5⅜	5⅛—5⅜
100,000	10	Aug. 9	16	8½	Bournemouth Gas and Water { 5 p.c.	..	12¾—13¼	...
583,110	10	,,	7	7	Bournemouth Gas and Water { B 7 p.c.	15—15½	11¾—12¼	12½
115,000	10	,,	6	6	Bournemouth Gas and Water { Pref. 6 p.c.	13½—14	11—12	...
162,025	—	June 28	—	4	Bournemouth Gas and Water { 4 p.c. Deb.	..	77—82	...
992,045	Stk.	July 12	14	6 7/10	Brentford A Consolid.	261—266	100—105	103½
734,920	,,	,,	11	6½	Do. B New	204—209	100—105	103
55,000	,,	,,	5	5	Do. 5 p.c. Pref.	109—111	90—95	93—93½
221,400	,,	June 14	4	4	Do. 4 p.c. Deb.	91—93	77—82	...
214,745	,,	Aug. 23	11	11½	Brighton & Hove Orig.	208—213	175—180	177
244,200	,,	,,	8	8½	Do. A Ord. Stk.	154—159	127—132	...
1,287,500	Stk.	July 26	5	5	Bristol 5 p.c. max.	..	95—96*a*	...
570,000	20	Oct. 4	12½	12	British A Ord.	44—45	122—127	122—123½
100,000	10	June 28	—	7	Do. 7 p.c. Pref.	..	122—127	122½—123
120,000	Stk.	,,	4	4	Do. 4 p.c. Deb. Stk.	88—90	75—80	...
100,000	10	May 17	—	7	Cape Town & Dis., Ltd.	1½—2½	7—8	7—7½
100,000	10	Oct. 31	—	4½	Do. 4½ p.c. Pref.	4—6	6—7*	...
150,000	Stk.	June 28	4½	4½	Do. 4½ p.c. Deb. Stk.	70—75	75—80	...
237,860	,,	,,	—	7½	Cardiff 7½ p.c. Deb.	..	108—113	112—112½
157,150	,,	Feb. 26	5	5	Chester 5 p.c. Ord.	108—110	85—90*b*	...
1,513,280	,,	July 26	5/9/4	6	Commercial 4 p.c. Stk.	106—108	95—98	95½
560,000	,,	,,	5½	6	Do. 3½ p.c. do.	103—105	93—98	...
475,000	,,	June 14	3	3	Do. 3 p.c. Deb. Stk.	69½—71½	60—64	...
800,000	,,	14 Jan. 15	4	—	Continental Union, Ltd.	76—79	28—33	30—31½
200,000	,,	Dec. 14	7	4	Do. 7 p.c. Pref.	115—118	75—80	77—79
660,000		Aug. 9	—	6½	Croydon sliding scale.	..	102—105	...
284,975		,,	—	5	Do. max. div.	..	85—88	...
492,270	Stk.	—	6	4½	Derby Con. Stk.	123—125	107—110*c*	...
55,000	,,	—	4	4	Do. Deb. Stk.	102—104	74—76*c*	...
209,000	,,	Oct. 4	—	5	East Hull 5 p.c. max.	..	..	...
1,002,180	10	July 12	10	5	European, Ltd.	17½—18	8—9	7½—8
16,546,120	Stk.	July 26	4/17/4	5½	Gas Light { 4 p.c. Ord	98—102	94—96	94—96
2,600,000	,,	,,	3½	3½	Gas Light { 3½ p.c. max.	76—79	65—68	65½—66½
4,062,235	,,	,,	4	4	Gas Light { 4 p.c. Con. Pre.	96—99	79—82	79—80½
4,761,930	,,	June 14	3	3	Gas Light and Coke { 3 p.c. Con. Deb.	72½—74½	61½—64½	63
130,000	,,	Dec. 11	10	10	Gas Light and Coke { 10 p.c. Bonds	..	..	...
42,000	—	—	—	7½	Gas Light and Coke { 7½ p.c. Ilford Deb.	..	..	...
82,500	,,	Sept. 19	5	6⅔	Hastings & St. L. 5 p.c.	..	93—98	...
258,740	,,	,,	3½	5½	Do. 3½ p.c.	87—89	78—83	...
70,000	10	Oct. 18	11	10	Hongkong & China, Ltd.	16½—16¾	16—17	16
86,600	Stk.	Aug. 23	9	9½	Hornsey 7 p.c.	..	144—149	...
1,976,000	,,	May 31	9	17	Imperial Continental	150—160	152—157	153—156
401,400	,,	Aug. 9	3½	3½	Do. 3½ p.c. Deb. Red.	84—86	76—78	...
235,242	,,	,,	6½	6½	Lea Bridge Ord. 5 p.c.	119—121	95—100	...
2,127,240	,,	Feb. 26	10	5½	Liverpool 5 p.c. Ord.	..	92½—93½*b*	...
600,000	,,	Sept. 19	—	7	,, 7 p.c. Pref.	..	104—107*b*	...
165,736	,,	Aug. 23	7/5/6	9	Maidstone 5 p.c.	..	125—130	...
63,480	,,	June 28	—	—	Do. 3 p.c. Deb	..	55—60	...
75,000	5	June 14	6	7	Malta & Mediterranean	4¼—4½	3¾—4	...
50,000	100	Oct. 1	4½	4½	Met. of Melbourne { 4½ p.c. Deb.	99—101	95—98	...
541,920	Stk.	May 17	4	4	Montevideo, Ltd.	11½—12	49—54	51
1,875,892	,,	July 26	4½	4½	Newcastle & Gatsh'dCon.	98½—99½	85—87*d*	...
250,166	,,	Aug. 9	—	4	Do. 4 p.c. Pref. Stk.	..	74½—76½*d*	...
529,705	,,	June 28	3½	3½	Do. 3½ p.c. Deb.	82—83	73—74*d*	...
15,000	10	Aug. 23	—	11	North Middlesex 10 p.c.	..	16½—17½	...
75,940	10	,,	7/14/0	7 1/10	,, ,, 7 p.c.	14—15	11¾—12¾	...
300,000	Stk.	May 3	8	7	Oriental, Ltd.	117—122	97—102	100½—101½
138,120	Stk.	June 28	—	7⅛	Plym'th & Stonh'se 5 p.c.	..	108—113	...
60,000	50	Sept. 6	13	13	Portsea Island, B	128—131	100—105	...
100,000	50	,,	12	12	Do. C	118—121	97—102	...
1,450,345	5	29 Oct. 14	8	—	Primitiva Ord.	5⅛—6	⅛—⅛	5/—5/6
2,499,800	5	30 Dec. 15	5	—	Do. 5 p.c. Pref.	4⅞—5	1⅛—1⅛	26/—27/6
341,400	100	June 1	4	4	Do. 4 p.c. Deb.	91—93	70—74	...
600,000	Stk.	July 26	4	4	Do. ,, ,, 1911	..	56—59	...
220,135	,,	June 28	4	4	Do. B. Aires 4 p.c. Deb.	85—87	56—59	57
321,670	,,	,,	4	4	Do. Riv. Pl. 4 p.c. Deb.	85—87	56—59	...
150,000	10	Oct. 4	6	6	San Paulo { 6 p.c. Pref.	10½—11	5¼—6	...
125,000	50	July 2	5	5	San Paulo { 5 p.c. Deb.	47—49	38—41	...
270,000	Stk.	Aug. 23	10	5	Sheffield A	223—224	99—101*e*	...
419,968	,,	,,	10	5	Do. B	222—224	99—101*e*	...
1,047,000	,,	,,	10	5	Do. C	220—229	99—101*e*	...
133,201	Stk.	—	4	6	Shrewsbury 5 p.c.	..	..	...
90,000	10	Oct. 18	9	6	South African	10½—11½	7—9	...
1,609,895	Stk.	July 26	5/9/4	5	South Met. Ord.	111—113	97½—90½	97½—98¾
250,000	,,	July 12	—	5	Do. Red. Pref.	..	98—100	...
1,895,445	,,	,,	3	3	Do. 3 p.c. Deb.	72½—74½	61—64	...
734,000	,,	Sept. 6	—	6½	Do. 6½ p.c. Deb.	..	105—107	...
91,500	,,	Aug. 23	8½	8½	South Shields Con. Stk.	157—159	134—136*d*	...
1,087,795	,,	,,	6	6	S'th Suburb'n Ord. 5 p.c.	114—116	100—103	100½
368,837	,,	June 28	5	5	Do. 5 p.c. Deb. Stk.	116—118	97—102	101½
647,740	,,	May 3	5	7	S'th'mpt'n Ord. 5p.c. max	99—102	88—91	...
121,275	,,	June 28	4	4	Do. 4 p.c. Deb. Stk.	..	76—81	...
250,000	,,	Aug. 23	—	7	Swansea 7 p.c. Pref. Stk.	..	102—104	...
200,000	,,	June 28	—	6½	Do. 6½ p.c. Deb. Stk.	..	105—107	...
120,000	,,	July 26	—	8	Tottenham { A 5 p.c.	135—138	122—127	...
782,275	,,	,,	6	6½	Tottenham { B 3½ p.c.	115—117	100—105	102½
181,255	,,	June 14	4	4	Tottenham { 4 p.c. Deb.	87—89	78—82	...
258,251	Stk.	Aug. 23	5	5	Tynemouth 5 p.c. max.	108½—109	89—91*d*	...
30,000	,,	July 12	8½	9	Wandsworth, Wimbledon, and Epsom— Wandsworth A 5 p.c.	151—156	140—145	...
255,636	,,	,,	6½	7½	Do. B 3½ p.c.	129—134	116—121	120—120½
108,073	,,	,,	5/17/3	6 7/10	Do. C.	110—115	100—105	...
140,865	,,	,,	—	6 7/10	New Ordinary	..	..	...
352,000	,,	,,	6½	7½	Wimbledon 5 p.c.	117—122	110—115	...
98,000	,,	,,	6½	7½	Epsom ,, p.c.	121—126	118—123	...
88,416	,,	June 28	3	3	5 p.c Deb. Stk.	66—69	57—60	...

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. * Ex div.

SHARES FOR SALE.

WATER SHARES

FOR SALE BY TENDER.

500 £10 SHARES

IN THE

LEATHERHEAD AND DISTRICT WATER WORKS COMPANY.

(Dividend thereon limited to 7 p ct. per Annum).

Tenders must be delivered at the Offices of the Company not later than 11 a.m. on Monday, Nov. 26, 1923.

Particulars and form of Tender may be obtained from

JOHN YOUNG,
Secretary.

North Street,
Leatherhead,
Nov. 10, 1923.

Aldershot Capital Issue Over-Subscribed.—The issue of £45,000 of 4 p.ct. consolidated preference stock by the Aldershot Gas, Water, and District Lighting Company was very substantially over-subscribed.

Leeds and Coke-Oven Gas.—The Leeds Corporation Gas Department propose, subject to approval by the City Council, to utilize coke-oven gas from the Waterloo Main Colliery, in addition to that already taken from the Middleton Colliery, for supplementing the gas manufactured at the department's own works.

County of Lanark (Middle Ward) Gas Price Reductions.—The prices of gas in the districts supplied from the Uddingston Gas-Works have been reduced as from Nov. 1 as follows: In the Bothwell and Uddingston district, from 2s. 3d. to 2s. per 1000 c.ft.; in the Bellshill and Mossend district, from 3s. 4d. to 2s. 9d.; in the Holytown district, from 3s. 9d. to 2s. 9d.; and in the Larkhall district, from 3s. 9d. to 2s. 11d. The price of gas in the district supplied from the Cambuslang Gas-Works remains at 4s. 5d. per 1000 c.ft.

Gas-Works to be Sold by Auction.—As our advertisement columns show, an unusual opportunity occurs of purchasing under the hammer a private gas-works as a going concern. In the estate auction hall at their head offices, No. 22, King Street, St. James', S.W., to-morrow, Nov. 15, at 2.30, Messrs. Goddard and Smith will offer for sale by auction, in three or four lots, as a going concern, the Southminster (Essex) Gas-Works. The works are at present supplying about 4 million c.ft. of gas per annum to the growing village, and are apparently capable of doubling the output without the expense of adding to the existing works. Included are a manager's house, and some land. The present charge for gas is 6s. 8d. per 1000 c.ft.

Deal and Walmer Gas and Electricity Company.—At the annual general meeting of the Company on the 25th ult., the report and balance-sheet for the year ended June 30 were adopted, and a dividend was declared at the rate of 6½ p.ct. per annum for the last half-year, making with the interim distribution 6½ p.ct. for the whole year. It was intimated that a further reduction had been made in the price of gas as from July 1 last to 11d. per therm (equivalent to 4s. 1½d. per 1000 c.ft.) During the year the business of the Company continued to increase in volume. The manufacturing plant has now been practically remodelled. A portion of the carbonizing plant has been demolished, and replaced by a modern carburetted water-gas set. Extended facilities are being given to gas consumers for obtaining all lighting, heating, cooking, or power apparatus on cash or hire-purchase terms, in addition to limited simple hire. The Directors recorded with regret the recent death of Mr. W. H. Hammond, who was appointed a member of the Board only last year. Mr. E. H. Hinds, J.P., Chairman of the Walmer Urban District Council, was re-elected a Director of the Company, and Alderman A. W. Lambert, J.P., Mayor of Deal, was elected a Director in place of Mr. Hammond. A vote of thanks to the Directors, the Manager (Mr. J. F. Tyndall), the Secretary (Mr. J. J. Williamson), and other officers, for their successful conduct of the Company's business, was unanimously passed.

Primitiva Gas Company of Buenos Aires.—The working results in Buenos Aires for the six months ended June 30 show a profit, before deduction of debenture interest and London charges, of £23,275, against £28,318 for the corresponding six months of 1922.

Cheaper Gas at Birmingham.—At a meeting of the Birmingham Gas Committee on Monday, Alderman J. H. Lloyd was re-appointed Chairman. It was decided to recommend to the City Council that gas for domestic uses be reduced by 3d. per 1000 c.ft., from the December readings of the meters; other rates to be reduced on a graduated basis. The domestic rate will be 2s. 10d. per 1000 c.ft. It is the third reduction made this year.

York Town and Blackwater Capital Issue.—As our advertisement columns show, instructions have been received by Messrs. A. & W. Richards from the Directors of the York Town and Blackwater Gas Company to offer for sale by tender £20,000 of 5 p.ct. irredeemable preference stock. The minimum price of issue has been fixed at £83 per £100 of stock, at which the yield would be £6 0s. 6d. p.ct. This capital is required for extension of the works, plant, &c., rendered necessary by the increasing demands for gas; and as evidencing the growth of the business, it may be stated that the output, which for the year 1914 was 96 million c.ft., had increased last year to 141 millions. In the first nine months of the current year the consumption shows an increase of 7 p.ct. over the corresponding period of 1922. Tenders must be sent in to No. 37, Walbrook, E.C., by 11 o'clock next Friday, Nov. 16.

The Roscommon town authorities have decided to abandon gas for public lighting, and to substitute petrol lamps. Many ratepayers, however, are opposed to this retrograde step.

Two cases of failure in the electricity supply in places of worship occurred last Sunday week—one at Heckmondwike, the other in Barrow-in-Furness. In each case the church was without light for a considerable part of the service.

Last Sunday night an outbreak of fire occurred at Lever House, the London house of Lever Brothers, Ltd. The building is an extensive one of five floors; and the fire brigade had a difficult task to extinguish the flames. It is assumed that the fusing of electric light wires was the cause of the outbreak.

With the object of wiping-out a deficit in their funds, the Vale of Aylesbury Cycling and Athletic Club promoted a torchlight procession and carnival dance. The prize awarded for the best decorated vehicle was won by the Aylesbury Gas Company, who displayed an excellent advertisement for gas cookers and fires.

Walsall's shopping festival week has just taken place. The tradesmen of the town co-operated admirably; and the movement, intended to show that they are able to meet the requirements of the public, was well organized. The Corporation Gas and Electricity Departments had an attractive joint exhibition of their respective appliances.

NOTICES TO CORRESPONDENTS, ADVERTISERS, AND SUBSCRIBERS.

No notice can be taken of anonymous communications. Whatever is intended for insertion in the "JOURNAL" must be authenticated by the name and address of the writer—not necessarily for publication, but as a proof of good faith.

COPY FOR ADVERTISEMENTS for the "JOURNAL" should be received at the Office NOT LATER than TWELVE O'CLOCK NOON ON TUESDAY, to ensure insertion in the following day's issue.

Orders to Alter or Stop PERMANENT ADVERTISEMENTS should be received by the FIRST POST on Monday.

UNDISPLAYED ADVERTISEMENTS; Situations Wanted, Six Lines and under (about 36 words) 3s.; each additional Line, 6d. Situations Vacant, Apparatus Wanted and for Sale, ontracts, Public Notices, &c., 9d. per Line—minimum, 4s. 6d.

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Resists 4500° Fahr. Best for Gas-Works.
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Telephone: RUSHOLME 976. Telegrams: "GASMETER,"
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By order of the Board,
WILLIAM E. ROBERTS,
Secretary.
Secretary's Office,
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